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ATELEIOSIS: PROGERIA.

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THE word "infantilism," for which we are indebted to the French, is gradually finding its way into our text-books, and seems now to be accepted as part of our medical nomenclature. Such being the case the word "senilism," as applied to the opposite disorder of regressive development, becomes inevitable. It is obvious that we cannot continue to use the descriptive phrase, "morbid acceleration of regressive development" any more than we can encumber our writing with the phrase, "morbid delay of progressive development," when such words as "senilism" and "infantilism" are available. I feel, therefore, that I need make no apology for the use of the word "senilism" as well as of "infantilism" in my account of the two disorders which form the subject of my paper.

ATELEIOSIS.

Generally speaking, infantilism is the outcome of some prior morbid condition. It results, as a rule, from intoxication with the poisons of enteric, rheumatic, or other fever; or is brought about by defective action of the pancreas or of the thyroid gland. Infantilism

so produced is not of extreme degree, presents no characteristic disposition of the physiognomy or of bodily proportions, is never transmitted, and is seldom associated with sterility.

But as a rare event infantilism may crop up without perceptible cause, constituting essential infantilism, of which disorder ateleiosis is the most important variety. Though a well-marked entity, ateleiosis varies with the age of onset. It may set in at any age of progressive development, and, generally speaking its characters are those peculiar to the time of life at which it begins. Hence it is most easily to be recognised when it starts in babyhood or early childhood. The comparatively large head, long body, short limbs, and undeveloped facial characters, together with the good, though perhaps somewhat childish intelligence, sharply define ateleiosis from all other disorders. It seems never to lead to actual *arrest* of development. Growth becomes seriously retarded, so that in one case (1) it was found that the increase in length and in weight, which ought to have been accomplished in five years, was spread over a term of thirty-five years. The changes which take place largely depend upon whether the reproductive organs develop or do not develop. Of so much importance is this sex factor that it leads to a natural division into the sexual and the asexual forms. Generally speaking, sexual development is delayed so that puberty is postponed for some years, but occasionally the organs of sex remain infantile throughout life. In this latter event the infantilism is of extreme degree, so that, save for slow increase in height and in weight, and for the appearance of the superficial markings of age, the infantile resemblance remains almost unchanged. Perhaps the first to draw attention to these infantile characters was Lavater, who, in his 'Essays on Physiognomy,' gives a picture of the head and bust of a girl apparently of this type, and alludes to her as follows: "I subjoin the profile of a girl of sixteen whose stature scarcely exceeded two feet. Her physiognomy suggests absolutely no other idea but that of a *consolidated infancy*. The forehead bent forward indicates the physical imperfections of the first stage of human life, and the hollow inflection of the root of the nose is the infallible sign of mental weakness or want of vigour. . . . This dwarf, however, did not want sense, or rather she could prattle, and had a retentive memory."

In those cases in which the sex organs mature (sexual ateleiosis) the physiognomy undergoes more conspicuous alteration with increasing age; the prominent nose and other features of old age are apt to be superimposed upon those of infantilism, and the appearance of

sexual hair may cause a still wider divergence from the infantile type. Moreover, the duration of life may continue to its normal

FIG. 1.



limits, or even be protracted almost to centenarianism (2). Hence, all that may ultimately be left of the original infantilism may be a conspicuous shortness of the body, a large head, and other childish proportions of the body and limbs.

There is reason to believe that the origin of ateleiosis is to be explained on the ground that it is a discontinuous variation or muta-

tion, its spontaneous appearance, its pronounced individuality, and its occasional heredity being greatly in favour of this view.

Ordinary symptomatic infantilism, on the other hand, is in all probability a continuous variation or fluctuation, seeing that it appears in response to a favourable environment, is of minor degree, and, like all acquired characters, is not heritable.

The characters of asexual ateleiosis are well shown in the figure. In this case the shorter boy is affected with this form of infantilism. He is of the age of twelve, and standing beside him is his normal brother of six years. It will be noticed that his rounded contours, height, proportions, and physiognomy are all eminently childish. No cause whatever can be found for his condition, for, with the exception of some trifling childish ailments, he has enjoyed good health all his life. He is the only abnormal member of a family of eight, and the delay of development is said to have started when he was about two years of age. He is now of the height and weight usual at four. He shows no sign of cretinism or of rickets. His epiphysial ossification is about one year behind that of his brother of six; dentition is backward, and the teeth are crowded. He is a bilateral cryptorchid. He is of good intelligence, and two years after this portrait was taken acted the leading part in a play at one of the London theatres. According to the critics, he carried out his double rôle of baby-in-arms and of man-about-town intelligently and with spirit, acting equally well in both capacities.

PROGERIA.

Senilism, like infantilism, is of two kinds—symptomatic and essential. Symptomatic senilism is induced by intoxication with disease organisms, such as those of enteric fever and of syphilis, and with alcohol, gout, and lead. Senilism, in short, is brought about by much the same causes as those which give rise to infantilism.

Essential senilism, like essential infantilism, shows itself in more than one form, and we are now concerned with that form which has received the name of “progeria.” In this disease the premature senile decay is exceedingly pronounced, and throughout its whole course runs hand in hand with a form of infantilism. It is highly probable that progeria, like ateleiosis, varies with the age of its occurrence, but at present we are only acquainted with that which begins (like ateleiosis) in infancy or early childhood. This disease is so excessively rare that only three cases have been recorded. The first of these was described by Sir Jonathan Hutchinson (3) in a boy, aged

3½ years, in 1886. The second case, with a post-mortem examination, was described in 1897 (4), and the third came under the care of Dr. Variot in Paris in 1910 (5).

One is tempted to regard progeria as nothing more than ateleiosis combined with premature senile decay. But it is against this view that the senilism forms a conspicuous feature at the beginning, and that the fully developed product shows no trace of ateleiosis in its composition. The patient so affected is a very remarkable and pitiful object. He is conspicuously dwarfed, but his proportions are rather on the adult than on the infantile model. He is but little backward in sex development, but possesses no sexual hair. This no doubt is largely because of the withered condition of his skin and of its appendages. There is perhaps a sparse and feeble growth of whitish hair upon the scalp but nowhere else, and the nails are thin and membranous. Fat is almost completely absent, and the muscles are small and feeble. The vivacity of childhood is conspicuously absent, and the attitude and demeanour are those of a tired valetudinarian.

The condition of the internal organs at the one post-mortem examination that has been made was in keeping with the external appearances, and consisted in a mixture of immaturity and prematurity, some organs being almost normal, others in a state of senile fibrosis or of atheroma.

In seeking for an explanation of the disease it is important to separate it from those conditions in which senilism is consecutive to infantilism. Thus premature senile decay may apparently ensue as the result of ateleiosis. This I believe is the explanation of a case (6) which was once brought to my notice in which a woman of infantile size and proportions began to show signs of old age after the age of thirty, and died from senile decrepitude at forty-two. Subsequent inquiry into this case has convinced me that there was no premature old age at the beginning, but, on the contrary, unmixed ateleiosis.

Another case of senilism consecutive to infantilism is that of the celebrated French dwarf Nicholas Ferry, or Bébé, who seems to have owed his dwarfism (infantilism) to a combination of congenital syphilis with microcephaly. He was court dwarf to Stanislaus of Poland, and was of childish size and appearance until the age of sixteen. He then rapidly fell into a state of senile decrepitude; his nose increased prodigiously in size, his back became crooked, his head fell forward, he lost his gaiety of spirit, and ultimately became lethargic and died of old age at twenty-two. His skeleton,

now in the Natural History Museum of Paris, is about the size of that of a child of four, but shows conspicuous senile changes, especially with respect to the nose and jaws.

From the study of these and other cases of senilism, it is patent that progeria is distinct from consecutive senilism. It is not mere

FIG. 2.



senile decay implanted upon a previous infantilism. Neither is there any reason to suppose that any one organ is responsible for the change. It is far more likely that the disease is, like ateleiosis, a regressive major variation in which the body is involved as a whole. It seems highly probable that in the first place the change is senile, and that this blight of senility, falling upon the body at such an exceedingly early age, so retards its development that infantilism results, and that these two processes of infantilism and senilism then run their course together.

The characters of progeria are shown in the photograph, which was taken when the patient was fifteen. The stature and proportions are childish, but the physiognomy, leanness and baldness are elderly. There was in reality a thin growth of white hair upon the scalp. The ear lobule is absent; the nasal cartilages were much more conspicuous than is indicated in the figure; some conspicuous veins meandering over the scalp are not visible in the photograph, and the nodosity of the fingers, owing to prominence of the epiphyses, is not very clear.

REFERENCES.

- (1) H. BATTY SHAW.—“A Clinical Lecture on Ateleiosis,” ‘Clinical Journal,’ 1910, xxxvii, p. 136.
- (2) ‘Memoirs of Count Boruwlaski’; ‘The Life and Love-Letters of a Dwarf,’ by H. R. Heatley; also ‘Giants and Dwarfs,’ by E. J. Wood.
- (3) ‘Med.-Chir. Trans.,’ 1886, lxi, p. 36.
- (4) *Ibid.*, 1897, lxxx, p. 17; also ‘Practitioner,’ 1904, lxxiii, p. 188.
- (5) ‘Bull. de la Soc. de Pédiat. de Paris,’ 1910, xii, p. 307; also ‘La Clin. Infant.,’ 1910, viii, p. 705.
- (6) ‘Practitioner,’ 1904, lxxiii, p. 188.

A SUPPURATING OVARIAN CYST IN A GIRL, AGED 10 YEARS, PROBABLY INFECTED FROM HAIRPINS IMPACTED IN THE VAGINA.*

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A GIRL, aged 10 years, was admitted to hospital on December the 16th, 1903, under the care of Dr. Soltau Fenwick. Eighteen months previously she had been in hospital with abdominal pain, supposed to be due to tuberculous peritonitis. Since then she had remained quite well until December the 6th, when she complained of headache and pain in the abdomen, accompanied by vomiting and some vaginal discharge.

Condition on admission.—Patient was thin, dark-complexioned, rather delicate-looking and anæmic. Her breath was very offensive. The abdomen was distended, but there was no tenderness anywhere. Her temperature was 100°. Between December the 17th and the 28th she had a hectic temperature varying between 97° and 102°.

* Paper read at the Royal Society of Medicine (Obstetrical and Gynæcological Section) on April the 6th, 1911.

On the 31st the temperature rose to 103.6° , was accompanied by pain in the right iliac fossa, and continued irregular, with daily remissions.

On January the 6th, 1904, there was pus in the urine, with marked resistance in the right iliac fossa. On the 12th the temperature was 103° , and operation was decided upon. Chloroform was administered on the 13th, and an incision was made through the muscles in the right iliac region. After separating adhesions the appendix was found inflamed and enlarged, and adherent to the brim of the pelvis, and when removed was found to contain pus. The intestines were plastered over the pelvis, so no examination of the pelvic viscera was made. The incision was closed with through-and-through silkworm-gut sutures, with a drainage-tube at its lower end.

After the operation the patient seemed much better, the temperature was comparatively lower, although the diurnal variations were still rather great, but after a few days the temperature began to rise again, until, on February the 4th, it once more reached 103.6° . There was more pus in the urine and more albumin. The bladder was washed out daily, and after a few days there was remission of the temperature, only to be followed by a steadily increasing rise with greater daily variations.

On March the 2nd I examined the patient under an anæsthetic, and on putting my finger into the vagina discovered the rounded ends of two hairpins, the points of which were firmly embedded in Douglas's pouch. These were removed. I thought that with the removal of the hairpins the temperature might become normal, but this not being the case it was decided to re-open the abdomen to ascertain if there was a septic focus in the pelvis. The presence of the hairpins in the vagina could not be accounted for, as in spite of repeated coaxing, entreaties and scoldings, the patient denied all knowledge of the matter.

On March the 9th I opened the abdomen in the middle line below the umbilicus. After tedious dissection and separation of adhesions, the intestines being extensively matted together all over the lower part of the abdomen, a dark, rounded swelling was discovered immediately behind the bladder, adherent on all sides to the intestines. The swelling was tapped and found to contain pus. The trocar hole was sewn up, and the cyst was then carefully removed. A drainage-tube was placed in the cavity left by the cyst, and the wound was sewn up by interrupted silkworm-gut sutures. The patient made an uninterrupted recovery. After the operation the temperature was only once above 99° .

She left the hospital on April the 21st in good health, having put on weight.

On October the 12th, 1905, she was re-admitted. She had been for a year at a convalescent home at Enfield. During that time she had had pain occasionally in the appendix scar, accompanied by some bulging. The pain was relieved by rest in bed for a few days. On admission she was in good condition. There was some gurgling in the right iliac region, and some bulging, the intestines probably being adherent to the appendix scar. There was no swelling elsewhere in the abdomen. Nothing was then done, and she was discharged on October the 21st.

On December the 11th, 1905, she was re-admitted for examination under an anæsthetic, which took place on the 21st. *Per vaginam*: In the upper part of the vagina was a slight annular stricture, above which was a pouch about half an inch deep, at the top of which the vaginal mucous membrane was slightly thickened and nodular. *Bimanually*: High up in Douglas's pouch was a rounded swelling like the fundus, which could be traced down to the top of the pouch above described.

Before anything further could be done the patient developed scarlet fever, and was sent to a fever hospital. Two years later, on December the 14th, 1907, she was again admitted. During the interim she had been in service, and had found that the bulging of the wound in the right iliac fossa caused her pain and discomfort. Her weight was then 6 st. 11 lb. 13 oz. On the 19th she was anæsthetised, and an incision was made through the scar in the right iliac fossa. A portion of the intestine was adherent to the scar at one spot, and a tag of omentum to the site of the appendix, but beyond this there were no adhesions anywhere in the abdomen. The intestine was separated from the scar, the scar-tissue excised, and the wound sewn up in three layers. The central wound was treated in the same way, as it showed signs of weakness at its lower part. The wounds healed by first intention, and the patient left the hospital on January the 11th, 1908. Since then she has been in service, and when last heard from (February, 1911) was in perfect health.

This case is interesting, not only because of the rarity of ovarian cysts in children, but also on account of the difficulty in diagnosis. At first it was thought that the patient was suffering from tuberculous peritonitis, but subsequently the irregular temperature and tenderness in the right iliac fossa led to a diagnosis of suppurative appendicitis, for which operation was undertaken. The operative

findings seemed to confirm the diagnosis of appendix trouble, as the appendix was inflamed, enlarged, buried in adhesions over the brim of the pelvis, and contained pus. For a few days the patient improved and the temperature fell, but soon rose again, with a renewal of its daily oscillations, so that the presence of further trouble was clear.

The discovery of the hairpins deeply embedded in the vaginal wall made one suspect pelvic suppuration, and on opening the abdomen later a suppurating ovarian cyst was found, which had probably become infected from the foreign bodies in the vagina. It is, of course, impossible to say whether the appendicitis was primary or secondary to the pelvic condition, but I am inclined to regard it as secondary.

An interesting feature of the case is that at the subsequent operation for ventral hernia all trace of the dense pelvic adhesions had disappeared.

In 1896 Mr. Bland Sutton published a table of 79 cases of ovarian cysts in children, of which 41 were instances of simple cysts or adenomata, and 33 cases of dermoid cysts. I have collected 38 more cases, of which 15 were dermoids. It is interesting to note that in two instances operation was undertaken for supposed acute appendicitis, as in my own case. Torsion, it is stated, occurred in four cases. Judging by the records, suppuration is a rare complication, as it is mentioned in three only of the whole series of cases.

BIBLIOGRAPHY.

Ovarian Cysts in Children (not including Dermoids).

- (1) ALCOCK.—'Lancet,' 1871, ii, p. 850.
- (2) ALEXANDER, R. J.—'Texas Med. Journ.,' 1898-9, xiv, p. 163.
- (3) ARUMGAM, J. V.—'Brit. Med. Journ.,' 1907, i, p. 1363.
- (4) AUBERT.—'Lyon Méd.,' 1893, lxxiii, p. 156.
- (5) BALDY, J. M.—'Amer. Gyn. and Obstet. Journ.,' 1899, xiv, p. 184.
- (6) BECKETT, W. W.—*Ibid.*, 1898, xii, p. 349.
- (7) BELL.—'Lancet,' 1887, i, p. 418.
- (8) BOLDT, H. J.—'Proc. Path. Soc.,' New York, 1888, p. 63.
- (9) BORNSTEIN, M.—'Journ. Amer. Med. Assoc.,' 1909, lii, p. 1102.
- (10) BRYANT.—'Guy's Hosp. Rep.,' 1869, 3rd ser., xiv, p. 265.
- (11) CHENOWITH.—'Amer. Journ. of Obstet.,' xv, p. 265.
- (12) DAVIDSON, C. F.—'Med. News,' 1892, lxi, p. 14.
- (13) DELASUSS.—'Journ. de Sci. Méd. de Lille,' 1903, i, p. 235.
- (14) DUCHAMP.—'Archiv. de Tocol.,' 1884, xi, p. 23.
- (15) DURANTE, G.—'Bull. Soc. Anat. de Paris,' 1898, lxxiii, p. 464.
- (16) EASTMAN, J.—'Med. and Surg. Monitor,' Indianop., 1900, iii, p. 410.
- (17) ERMANN, J.—'New York Med. Journ.,' 1904, lxxx, p. 1175.
- (18) GIROL, R.—'Archiv. de ginecol.,' Barcel., 1895, viii, p. 644.

- (19) GOULD.—‘Med. Press and Circ.,’ 1892, ii, p. 218.
- (20) HAMAKER.—‘New York Med. Journ.,’ 1889, i, p. 288.
- (21) HOMANS.—‘Laparotomies, etc.’ (3 cases), Boston, 1887.
- (22) JOHNSON, R.—‘Trans. Clin. Soc.,’ 1896-7, xxx, p. 167.
- (23) JUON.—‘Gaz. Hebdomadaire,’ 1869, 2me sér., vi, p. 396.
- (24) KARCEWSKI, A.—‘Medycyna,’ 1903, xxxi, p. 598.
- (25) KEEN.—‘Brit. Gyn. Journ.,’ 1893-4, ix, p. 339.
- (26) KELLY.—‘Johns Hopkins Hosp. Rep.,’ 1894, iii, p. 672.
- (27) KOEBERLE.—‘Lond. Med. Rec.,’ 1876, p. 90.
- (28) KOLLOCK.—‘Journ. Amer. Med. Assoc.,’ 1891, xvii, p. 890.
- (29) LAING, R. C.—‘*Ibid.*,’ 1908, i, p. 1350.
- (30) LUCAS.—‘Trans. Clin. Soc.,’ 1888, xxi, p. 224.
- (31) LUDLAM.—‘Clinique,’ Chicago, 1894, xv, p. 114.
- (32) MACGILLIVRAY, C. W.—‘Lancet,’ 1907, i, p. 1487.
- (33) MONNIER, L.—‘Rev. Pract. de Gyn. et d’Obstét.,’ 1900, xvi, p. 165; ‘Arch. de Tocol,’ 1893, xx, p. 581.
- (34) OMORI and IKEDA.—‘Berlin. klin. Wochenschr.,’ 1890, xxvii, p. 148.
- (35) PARKER.—Quoted by Bland-Sutton, *loc. cit.*
- (36) PARKS.—‘Amer. Journ. Med. Sci.,’ 1890, c, p. 258.
- (37) PÉAN.—‘Leçons de Clin. Chir.,’ 1885-6, 7me sér.
- (38) IDEM.—‘*Ibid.*,’ 1887-8, 8me sér.
- (39) PLATT, W. B.—‘Maryland Med. Journ.,’ 1889-90, xxii, p. 446.
- (40) POWER, D’ARCY.—‘Trans. Path. Soc.,’ 1897-8, xlix, p. 186.
- (41) RAMANGÈ, A.—‘Ann. de Circ. Med. Argent.,’ Buenos Aires, 1891, xiv, p. 201.
- (42) REDFORD, J. H.—‘Brit. Med. Journ.,’ 1905, i, p. 412.
- (43) SALLI.—‘Zentrabl. f. Gyn.,’ 1891, xv, p. 711.
- (44) SCHWARZ.—‘Arch. f. Gyn.,’ 1878, xiii, p. 475.
- (45) SIMS, M.—Keating’s ‘Cyclopædia of Diseases of Children,’ 1890, iii, p. 735.
- (46) SUTTON, BLAND.—‘Diseases of the Ovaries and Fallopian Tubes,’ 1896, p. 176.
- (47) SUTTON, S.—‘Journ. Amer. Med. Assoc.,’ 1892, xix, p. 139.
- (48) SYME.—‘Austral. Med. Journ.,’ xv, p. 34.
- (49) TAIT, LAWSON.—‘Diseases of the Ovaries,’ p. 319.
- (50) TERRIER.—‘Rev. de Chir.,’ 1885, v, p. 34.
- (51) IDEM.—‘*Ibid.*,’ 1886, vi, p. 194.
- (52) TERRILLON.—‘Bull. gén. de Thérap.,’ cxv, p. 529.
- (53) THELLUNG.—‘Zentrabl. f. Gyn.,’ 1908, xxxii, p. 1464.
- (54) THORNTON.—‘Brit. Med. Journ.,’ 1887, ii, p. 594.
- (55) USIGLIO.—‘Rev. Venita di Soc. Med.,’ 1890, xiii, p. 221.
- (56) VINCENT.—‘Lyon Méd.,’ 1893, lxxiii, p. 156.
- (57) WALTER, W.—‘Brit. Gyn. Journ.,’ 1895-6, xi, p. 51.
- (58) WELLS, SIR SPENCER.—‘Ovarian Tumours,’ 1882.

EPIDEMIC ANTERIOR POLIOMYELITIS: ITS SYMPTOMS
AND TREATMENT; WITH A REVIEW OF RECENT
INVESTIGATIONS INTO THE EXPERIMENTAL DIS-
EASE IN MONKEYS.*

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THE disease long known as acute anterior poliomyelitis, spinal infantile paralysis, infantile atrophic paralysis or essential paralysis of children was first described by Underwood (1), of England, as far back as 1774, but it was not until 1860 that Heine (2) published the first reliable account of the disease, and suggested that the causative lesion was in the spinal cord. His theory was verified by Cornil (3) in 1863, who then demonstrated the spinal lesion, his observations being confirmed by Provost in 1865, and later by Lockhart Clarke (4) and Charcot and Joffroy (5).

There are few diseases of early life that present so many interesting problems as does anterior poliomyelitis, and there are still fewer in which our knowledge as to causation and prevention has made so little advance in spite of the many and thorough investigations which have been made into the spontaneous disease in the human subject.

During the past twelve months, thanks to the brilliant laboratory research of Flexner and Lewis in America, and of Römer (6), Joseph (7), Levaditi (8), Landsteiner and Popper (9) in Europe, many of the secrets of this widespread disease have been unravelled, and it is in order to bring the results of these recent investigations to your notice that I have made it the subject of this communication. A further reason for selecting this subject is that during the past summer and autumn I have noticed a decided increase in the number of cases of poliomyelitis at the Children's Infirmary in Liverpool, the symptoms of which were such as to closely resemble the epidemic type as recently described in Europe and America: it is therefore probable that next summer we shall see a further increase, if not an actual epidemic of this disease in England, and in order to cope with it effectually it is of the utmost importance that we should acquaint ourselves with the recent advances in our know-

* Read before the Liverpool Medical Institution, March the 30th, 1911.

ledge as to its causation and prevention, in order that we may be alert to detect its earliest appearance, and be ready to employ such measures as will check its advance, and thus safeguard the community from a disease the permanent consequences of which are so well known to all.

The infectious origin of the disease has long been rendered highly probable by the frequent observation of its epidemic occurrence, such epidemics in the past having been recorded by Medin (10) and Brieglib in Europe, and by Colmer (11) and Caverley (12) in America. During recent years there has been a widespread epidemic invading Sweden, Norway, Germany, Austria, and the United States of America; and our knowledge of the disease up to 1907 has been clearly stated in a monograph by Wickman (13), in which he produces convincing evidence of the contagiousness of the disease.

The symptoms of the ordinary type may thus be briefly stated: A child, usually under five years of age, becomes suddenly feverish, restless, and irritable; vomiting is a frequent early symptom and not unfrequently diarrhoea, and there is pain and discomfort on handling. These symptoms continue for three or four days, during which the temperature ranges between 101° and 102° , the irritability and the tenderness being the most noticeable features. The fever then disappears and the child becomes bright and cheerful, but when he attempts to get up, if the discovery has not been made before, he is found to be paralysed in one or more of his limbs. This is followed by a period of quiescence lasting one to four weeks, after which the paralysis begins to disappear, until at the end of one to six months it is limited to one extremity or to a single group of muscles. Rapid atrophy of the affected muscles with loss of faradic irritability has meanwhile set in, and leads eventually to the various deformities with which we are all so painfully familiar.

The epidemic type differs in many important respects from the sporadic, one peculiarity being that it not unfrequently attacks older children or even young adults as well as infants. The symptomatology also differs in many details: the fever lasts longer, is a more prominent factor, and is always present, whilst in the sporadic form it is not unusual for a child to go to bed perfectly well and awaken in the morning with characteristic spinal paralysis. Further, at times it lasts for many days after the appearance of the paralysis. Delirium and stupor are frequently observed, but there is no vomiting except at the onset of the attack: the disease may commence with intestinal disturbance, but in other cases constipation

is present. Hyperæsthesia of the whole body is common, and cervical rigidity with head-retraction is frequently seen on the first, second, or third day. The patellar reflexes are usually absent, and extreme pain in handling the limbs is a common feature. In older children incontinence of urine and fæces, an unusual symptom in sporadic cases, often occurs, and owing to the liability of the medulla, pons and other parts of the central nervous system to be involved, acute brain symptoms are frequently observed.

This type of the disease is well illustrated by the case of Samuel M—, aged 2 years and 7 months, who was admitted into the Children's Infirmary on October the 24th of last year. We were informed that a week previously he had suddenly become irritable, feverish, and had vomited: he complained of pain in his head and feet, and a few days before admission it was found that he had lost all power in his legs. On admission his temperature was 100° F., pulse 132 and regular, he was extremely irritable, and marked tenderness was observed on handling. There was cervical rigidity with retraction of the head, but no Kernig's sign, and the patellar reflexes were absent. There was paresis of the right external rectus and right side of the face and rigidity of the left lower extremity. The optic discs were examined and found normal. He thus presented a symptom-complex which markedly suggested cerebro-spinal meningitis, so I accordingly at once performed a lumbar puncture and withdrew 25 c.c. of clear cerebro-spinal fluid under increased pressure which on examination gave a good Fehling reduction, showed no excess of protein, no polymorphonuclear cells and only a slight increase of lymphocytes. The fact that it reduced Fehling and contained no excess of protein enabled us at once to exclude the possibility of meningitis, whereas the excess of lymphocytes coupled with the paralysis, and the absence of knee-jerks, justified the diagnosis of polio-myelo-encephalitis, which was subsequently confirmed by the rapid and marked atrophy of the paralysed limb.

Another case, but of a less severe type, was that of Frances P—, aged 3½ years, who was taken ill with a feverish attack and irritability on September the 21st, 1910. There was no vomiting, and the bowels were constipated. On the following day it was found that she was unable to sit up in bed and that both lower limbs were paralysed. On September the 24th examination revealed complete paraplegia and paralysis of the deep muscles of the back: the patellar reflexes were entirely absent and the superficial reflexes were faint: the temperature was 100° F., respirations 24, and pulse 120.

The febrile disturbance continued for eight days after the paralysis appeared, and there was marked hyperæsthesia and tenderness on handling the muscles which did not totally disappear for eight weeks. Seventeen days after the onset the left leg was noticed to be colder than the right and measurement showed considerable atrophy of the thigh and leg muscles. In five weeks the paralysis of the back muscles had disappeared and movements in the lower limbs were beginning to return. The points of interest about this case are the long-continued febrile disturbance and the marked tenderness and pain which continued for many weeks after the temperature had become normal, suggesting involvement of the posterior nerve-roots which is frequently observed in the epidemic type.

The epidemic of 1909 in which the disease widely prevailed in France, Germany and America led to a renewed and vigorous study of the infection, which resulted in most valuable and important discoveries, the more salient features of which I now propose to discuss. In 1907 Flexner and Lewis first attempted to transmit poliomyelitis from human beings to monkeys by means of injections of the cerebro-spinal fluid obtained by lumbar puncture, but failed in every instance to produce symptoms which in any way suggested or resembled the disease. In September, 1909 (14), they obtained for the first time, in a fresh and sterile condition, the spinal cords of two children who had died of the disease: of these an emulsion in saline solution was made which on being injected directly into the brain of monkeys resulted after a few days in typical symptoms and paralysis. This in itself was important, but it was further demonstrated that the spinal cord of the first series of monkeys, when treated in a similar way, was also successful in transmitting the disease to a second series, and the experiment was repeated through twenty-five generations of the virus, twenty-five series of monkeys being used for the purpose. They also observed that the incubation (15) period, reckoned as the interval of time between inoculation and the first appearance of paralysis, varied from three or four to thirty-three days, the average period being eight days, and that from six to eight hours before paralysis there were distinct prodromal symptoms consisting of undue nervousness, excitability, inability to fix the gaze and erection of the body hairs. The onset and extent of the paralysis was in every way similar to that seen in the human subject, the only point in which the experimental disease differed being the high mortality which accompanied it. They, therefore, at the very onset of their experiments not only proved beyond all doubt the infectious origin of the active agent but also

established the length of the incubation period, a point upon which all previous investigators had been silent.

Pathological (16) investigation also showed a close similarity between the experimental and spontaneous disease. To the naked eye all that was visible was congestion and hæmorrhage into the spinal cord and medulla, chiefly, but not exclusively, affecting the grey matter of the anterior horns. Microscopically no part of the spinal cord, including the medulla, was free from lesions, but the most severe were always found at those levels corresponding to the groups of muscles most severely paralysed. In the spinal meninges there was seen a diffuse infiltration of round cells into the adventitial coat of the blood-vessels, the muscular coat and the intima being unaffected except that the lumina of the smaller vessels were not unfrequently encroached upon or even blocked by compression. The cellular infiltration was always interstitial, made up almost exclusively of mononuclear cells, and did not give rise to exudate on the surface of the cord or brain. In the grey matter of the cord the lesions were most extensive in the anterior horn but were also found in the posterior cornua and in the commissure. They consisted of cellular infiltration and œdema of the perivascular spaces and sometimes of small hæmorrhages. At times there were only minute foci of injury, whereas in other cases the anterior horn was completely degenerated: the infiltration of the perivascular sheaths of the vessels was continuous with that of the pia arachnoid. The intervertebral ganglia were always found to be affected with a diffuse and nodular infiltration of lymphocytes, especially between the nerve-cells and nerve-fibres, both of which were at times degenerated or necrosed. The brain, though less commonly affected, is not spared, and there, too, the injuries depend upon vascular lesions of a similar nature.

From the nature and distribution of the lesions it would therefore appear that the virus becomes first implanted on the lepto-meninges, where it causes cellular infiltrations, which are most marked in the perivascular lymph-spaces of the arteries which enter the nervous tissues. The extent of the inflammation depends upon the richness of the arterial supply, and thus is explained the liability of the lumbar and cervical enlargements to the more severe lesions. It would also appear that the majority of the paralyses that are not permanent are due to temporary vascular impediments and œdema situated outside the lumina of the blood-vessels, whereas the groups of muscles permanently paralysed are dependent upon necrosis resulting from the more severe degenerative processes.

Attention was next directed towards determining the nature of the virus (17) responsible for producing the disease. A very thorough and painstaking study of film preparations and sections obtained from the nervous structures and other organs, both of human subjects and of monkeys, failed entirely to discover any of the bacteria which had previously been described by other investigators; it was therefore thought that the infective agent, like that of rabies and vaccinia, must belong to that class of minute and filterable viruses that have not thus far been demonstrated under the microscope. This on investigation proved to be correct, for an aqueous suspension, obtained by preparing an emulsion of the spinal cord in distilled water, passed with great readiness and no loss of potency through the pores of the Chamberland and Berkefeldt filters. On staining film preparations minute points, circular or oval in form, were seen under the highest powers of the microscope, and when examined under the dark field innumerable bright dancing points were observed. These particles, however, cannot be said to represent the organism, as similar objects have been seen in filtrates obtained from spinal cords not affected with poliomyelitis. It was further ascertained that the filtrates were highly potent, $\frac{1}{1000}$ to $\frac{1}{100}$ c.c. being sufficient to produce the disease when injected into the brain. The virus is also highly resistant; it withstands glycerination for weeks or months, it is not destroyed by drying over caustic potash, and it still retains its potency on being frozen or kept for weeks at a temperature slightly above the freezing-point of water. On the other hand, it is destroyed on being exposed to a temperature of 45° to 50° C. for thirty minutes; also by a 1 per cent. solution of hydrogen peroxide, and by such simple disinfectants as menthol. Whether the virus can be cultivated outside the body is a doubtful question, but Flexner (18) early secured indications that it multiplied in a medium of bouillon mixed with human serum; but he has not yet succeeded in producing paralysis with these possible cultivations. That it is a living organism must be concluded from the fact that such minute quantities of it have sufficed to carry infection through an indefinite series of animals, representing twenty-five removes from the original human materials supplying it. Repeated attempts have been made to implant the virus on other animals, but so far without success, with the exception of Krause and Meinicke (19) in Germany, who alone claim to have transferred the disease to rabbits.

Attention was now turned to the path (20) by which the virus gains entry into the system. It was early demonstrated that

successful inoculations of the virus could be made by way of the peritoneum, general blood-stream, the sub-cutis, the spinal canal and the large nerves; but none of these avenues lead so uniformly to paralysis as did the original intra-cerebral route. It was, however, now discovered on scarifying the mucous membrane of the nasopharynx and inoculating the virus by means of a swab upon the injured surface that manifestations of paralysis, with few exceptions, promptly resulted. Upon theoretical considerations Flexner regarded with special suspicion the mucous membrane of the nasopharynx as a probable path of elimination, as well as of entry of the poison, and this opinion was confirmed by making successful inoculations with emulsions of this mucous membrane, obtained from animals who had been infected by the ordinary intra-cerebral route, and which had been previously passed through a bacteria-tight Berkefeldt filter. It had already been demonstrated that the virus could be implanted directly on to the lepto-meninges by injections into the spinal canal by means of lumbar puncture, so that it would appear that not only is the poison eliminated by way of the naso-pharyngeal mucosa, but also that the nasal and meningeal route is the one by which the disease gains an entry into the system. The virus has not thus far been found in the fæces or urine, nor in the intestinal mucous membrane or bile.

The characters of the cerebro-spinal fluid (21), obtained by lumbar puncture also received careful investigation. In twenty-four to forty-eight hours after the injection of the virus it showed slight opalescence, increase of protein and large numbers of lymphocytes and small polymorphonuclear cells; the fluid withdrawn at this stage contained the virus, and when injected by the cerebral route produced the characteristic symptoms. After the paralysis had appeared the fluid was quite clear, contained no excess of protein, and only a small increase in the number of lymphocytes. In the human subject the fluid is rarely obtained in this early stage, and when the disease is established, as I have shown in the case of Samuel M—, it is, with the exception of a slight lymphocytosis, practically normal. Wickman and Fulton, however, have both found a polymorphonuclear excess in the prodromal stage in children, and if their observations are confirmed we shall secure a valuable method by which atypical and non-paralytic cases may be diagnosed.

Numerous experiments have also been conducted to determine the kind and degree of immunity which is produced by the inoculation of the virus. A large number of monkeys have been employed for this purpose, and re-inoculations have been made at periods varying

between eight days and five months after the first appearance of the paralysis. In no instance were there noticed fresh symptoms or any increase in the paralysis which suggested a renewal of the attack. The first attack in the animals experimented upon varied between mere tremor of the head and complete paralysis of all the limbs, so it may be considered as established that an attack of poliomyelitis, even when unaccompanied by definite paralysis, resulted in immunity to re-inoculation with active virus for months and probably for years. Investigations were next made to determine whether this immunity depended upon the presence in the blood of certain protective agencies which were capable of neutralising the virus. This was demonstrated in the affirmative by mixing an active filtrate containing the virus with the blood-serum either of children or of monkeys who had recently recovered from the disease; the mixture was incubated for an hour at 37° C. and then injected into the brain of normal monkeys, and it was found that in no instance did paralysis follow. Further, it has been shown by Netter and Levaditi (22) that the blood-serum of a child after an abortive attack of poliomyelitis also contains a similar protective agency.

Efforts were now made to discover whether the immunity principles contained in the serum were sufficient to neutralise the virus of poliomyelitis when once it was present in the body, and to accomplish this the degree of immunity was first reinforced by subsequent injections of the virus. As a result of these experiments it can be stated that provided the quantity of the virus injected into the brain be not in excess of a given dose the development of paralysis can in many animals be prevented by making several injections of the serum into the sub-arachnoid space by lumbar puncture, whilst in others the onset of symptoms is much delayed; it has also been proved that infection through the nasal mucous membrane can with even greater certainty be prevented by similar injections.

These observations suggested the possibility of producing a therapeutic serum (23) by inducing an active immunity in some of the lower animals. Experiments upon the horse, rabbits, and chickens have shown that these animals do not yield such principles, but on the other hand there are indications that the sheep may react more favourably. It has been found that normal sheep's serum possesses a definite neutralising power when mixed with the filtered virus, and that this power can be reinforced by injections of emulsions of the spinal cord of recently paralysed monkeys, so that now it only remains to be determined whether this augmentation can

infection; and finally they have given us strong hopes that in the near future a specific method of treatment will be attained.

Finally, I would express my thanks to Dr. Flexner for sending me repeated contributions upon the progress of his investigations, and for his permission to use them for the purpose of this paper. Whatever be the ultimate results—and much yet remains to be done—it must be conceded that the establishment in a few months' time of so many important facts in regard to a hitherto unknown infection is a most brilliant demonstration of the advances which have been made in the experimental study of the disease.

REFERENCES.

- (1) UNDERWOOD.—'Treatise on Diseases of Children,' seventh edition, p. 251, London, 1823.
- (2) HEINE.—'Ueber spinale Kinderlähmung,' 1860.
- (3) CORNIL.—'Comptes rend. de la Soc. de Biolog.,' 1863, 3^e série, v, p. 187.
- (4) LOCKHART CLARKE.—'Extreme Muscular Atrophy,' 'Med.-Chir. Trans.,' li, p. 249, 1868.
- (5) CHARCOT and JOFFROY.—'Archiv. de Physiol. norm. et path.,' 1870, iii, p. 134.
- (6) RÖMER.—'Münc. med. Wochenschr.,' 1909, lxi, p. 2505.
- (7) JOSEPH.—*Ibid.*, 1910, lvii, p. 229.
- (8) LEVADITI.—'Presse méd.,' 1910, xviii, pp. 297 and 398.
- (9) LANDSTEINER and POPPER.—'Zeitschr. f. Immunitätsf.,' Orig. 1909, ii, p. 377.
- (10) MEDIN.—'Arch. de Méd. des Enf.,' 1898, i, pp. 257 and 321.
- (11) COLMER.—'Amer. Journ. Med. Sci.,' 1843, N.S. v, p. 248.
- (12) CAVERLEY.—'Journ. Amer. Med. Assoc.,' 1896, xxvi, p. 1.
- (13) WICKMAN.—'Beiträge z. Kenntniss der Heine-Medinschen Krankheit,' Berlin, 1907.
- (14) FLEXNER and LEWIS.—'Journ. Amer. Med. Assoc.,' 1909, liii, p. 1639.
- (15) *Idem.*—*Ibid.*, 1909, liii, p. 1913.
- (16) *Idem.*—*Ibid.*, 1910, lv, p. 1105.
- (17) *Idem.*—*Ibid.*, 1909, liii, p. 2095.
- (18) *Idem.*—*Ibid.*, 1910, liv, p. 45.
- (19) 'Deutsch. med. Wochenschr.,' 1909, xxxv, p. 1825.
- (20) FLEXNER and LEWIS.—'Journ. Amer. Med. Assoc.,' 1910, liv, p. 535.
- (21) *Idem.*—*Ibid.*, 1910, liv, p. 1140.
- (22) NETTER and LEVADITI.—'Presse méd.,' 1910, xviii, p. 397.
- (23) FLEXNER and LEWIS.—'Journ. Amer. Med. Assoc.,' 1910, lv, p. 662.
- (24) SACHS.—*Ibid.*, No. 17, 1910, lv, p. 1465.
- (25) 'Nerv. and Ment. Dis. Monograph Series,' No. 6, 1910.
- (26) FLEXNER and CLARKE.—'Journ. Amer. Med. Assoc.,' 1911, lvi, p. 585.

EARLY CARDIAC PARALYSIS AND HEMIPLEGIA IN DIPHTHERIA.

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THE following case is one of considerable interest for two main reasons—first, on account of the recovery of the patient after the very serious and generally fatal complication of cardiac paralysis occurring in the early stages of diphtheria; and secondly, because of the incidence of the very rare complication of hemiplegia, which occurred in the later part of the disease.

A girl, aged $4\frac{1}{2}$ years, was admitted to the North-Eastern Fever Hospital on July the 11th, 1910, on the fourth day of an attack of severe faucial and nasal diphtheria. A culture from the throat was found to contain Klebs-Loeffler bacilli. Twenty-four thousand units of antitoxin were injected subcutaneously on admission. The following day the membrane was loosening from the tonsils, and three or four days later the fauces were quite clean. On July the 13th—the sixth day of disease—there was a trace of albumin in the urine. On July the 15th (eighth day) the earliest suggestion of the coming cardiac trouble presented itself: the first sound of the heart, which up to this time had been quite clear, was noted to be “distant” in quality. For this reason the child was given adrenalin by mouth— $\text{m} \times$ of a 1 in 1000 solution—every four hours. For the next three days the first sound of the heart retained the same distant quality, the pulse keeping quite regular. On July the 19th (twelfth day) occurred that symptom of such gravity in the early stages of diphtheria, namely vomiting. The face was pallid, and the pulse was small but regular. The quality of the heart-sounds remained as before, but the rhythm of the beats was beginning to be disturbed, the short space being shortened, and it was evident that cardiac paralysis had set in. There was still albumin in the urine. All nourishment by mouth was withheld and the patient given rectal feeds, consisting of peptonised milk every four hours, to each of which $\text{m} \times \times$ of the adrenalin mixture was added. The pillow was removed, and the nurses cautioned to exercise the utmost care, so that as little strain as possible might be put upon the heart; nothing was given by mouth.

During the next twenty-four hours the child vomited twice. On July the 20th (thirteenth day) that rhythm of the heart of such dire

portent in diphtheria was observed—the cantering rhythm or the *bruit de galop*. The pulse was rapid but not irregular. For the following four days the vomiting and retching were very frequent, and continued for eight days altogether, but with lessening frequency. On July the 22nd (fifteenth day) the cantering rhythm was still present, the apex-beat being within the nipple line at this time. The sounds were fairly strong. On July the 24th (seventeenth day) there was frequent vomiting, and the heart was much dilated, the apex-beat being half an inch outside the nipple line. The pulse was very rapid, as were also the heart-sounds, but the cantering rhythm was not heard. At this time tincture of digitalis *mv* was added to each rectal feed.

Before the administration of the digitalis in the rectal feeds the pulse-rate was 124. The next day the pulse-rate was 132, and the day following the pulse remained small and very irregular.

On July the 27th, that is, on the third day of the administration of digitalis, the pulse-rate fell to 72. The tincture of digitalis was then only given in every second rectal feed. The following day it was given only in every third feed, and the pulse-rate keeping at 72 to 80 the digitalis was omitted altogether on July the 30th. The pulse-rate kept the same until August the 7th when it slightly increased in rapidity (88–100) and remained much the same until the child's discharge from hospital.

The patient thus appeared to benefit from the exhibition of the digitalis. Some have stated that this drug is contra-indicated in the early cardiac paralysis of diphtheria, an opinion which, from personal experience to the contrary, I do not hold with.

On July the 25th, the eighteenth day of disease, the vomiting had almost ceased. The pulse was small and very irregular. Albumin was still present in the urine, and the voice had a nasal twang. The apex-beat of the heart was one inch outside the nipple line. The sounds were very irregular but were remarkably good for so much dilatation. This latter, together with the absence of restlessness, I considered to be good prognostic signs; the child was also very bright and cheerful all through her illness considering the gravity of it. At this time the colour of the face had improved a little.

On July the 26th (nineteenth day) the patient vomited again. The pulse was very irregular, but the heart was not quite so dilated, the sounds remaining fairly good, the first sound, however, not being quite so clear as on the preceding day. During the next twenty-four hours the patient vomited five or six times, on one occasion

bringing up some blood-stained bile. On July the 27th (twentieth day) the heart was still less dilated, the apex-beat being only a quarter of an inch outside the nipple line. The first sound of the heart had rather improved in quality and the sounds were decidedly more regular. On July the 28th (twenty-first day) the condition was much the same. Vomiting occurred on this day also. The pulse was rather irregular, soft and slow (64). On July the 29th (twenty-second day) the heart was still dilated. Pulse 74. Vomiting and retching were still present and there seemed to be some paresis of the left labial muscles. There was also slight abdominal distension and diarrhœa. The voice was still very nasal. The persistant diarrhœa made rectal feeding impossible. Vomiting and retching likewise precluded feeding by mouth. The diarrhœa was temporarily checked and rectal alimentation made possible by an injection of mx of tinct. belladonnæ in 2 oz. of starch an hour before the rectal feed.

The next day, July the 30th (twenty-third day), the diarrhœa returned; the pulse being very much improved (80) and the heart less dilated, the tincture of digitalis was omitted from the rectal feeds. There had been no vomiting or retching since the previous evening; the diarrhœa persisting, however, nasal feeds of six ounces of peptonised milk were given every four hours. Paralysis of the sphincter vesicæ showed itself on this day, and lasted till August the 16th. Tincture of belladonna mx and adrenalin mxx were given in each nasal feed. From this time onward the heart began to contract down, although on some days there was rather more dilatation than on others. The weakness of the left labial muscles remained for some six or seven days.

On August the 2nd (twenty-sixth day) the child seemed brighter, and on this day was noticed reduplication of the first sound of the heart, and this tendency to reduplication lasted for sixteen days or so, with the exception of one day (August the 7th), on which the rhythm was again decidedly cantering.

On August the 4th there was a slight internal paralytic squint of the left eye. The voice was still nasal. Milk thickened with Benger's food was swallowed without difficulty, but unthickened milk was regurgitated through the nose. From this time onwards there was a gradual return to ordinary diet, eggs beaten up in milk being first given, followed by baked custard pudding and sponge cakes, until on August the 16th she was allowed minced meat, although it was not until about this time that the child could readily swallow thin liquids without the risk of regurgitation.

The nasal twang of the voice continued until about September the 5th—the fifty-ninth day of the disease. The albuminuria was present from July the 13th until August the 6th, the urine remaining quite normal for the rest of the patient's stay in hospital, with the exception of a faint trace of albumin on September the 9th.

On August the 18th (forty-second day) the knee-jerks were found to be absent. On August the 19th (forty-third day) paralysis of the left upper limb occurred, the child lifting and moving this arm about with the right arm, which was quite normal. The note made two days later was—"Left arm: child cannot abduct the arm from the body; there is paralysis of the deltoid. She can flex the forearm on the upper arm, but the triceps seems to act only feebly. She cannot supinate or pronate the left forearm. Left hand-grip feeble. Neck muscles apparently not paralysed. She cannot flex the wrist, but can extend it. The extensors of the forearm are apparently the only muscles unaffected. Right arm normal."

A few days after the paralysis of the arm was noted the left leg was also found to be paralysed. This probably occurred at the same time that the arm became paralysed, and was overlooked on account of the great care that was exercised in order that no excessive strain should be put upon the heart, which had recently been so seriously paralysed, the condition being further marked by the very weak condition of the child. There was no aphasia. No knee-jerks were present on either side, although the right leg was quite readily moved by the patient.

On August the 30th the child seemed to be gaining strength in the left arm.

On September the 1st (fifty-sixth day) some difficulty in swallowing presented itself with some dribbling of mucus from the mouth. There was probably some pharyngeal palsy, but not sufficiently pronounced to necessitate artificial feeding. The diaphragm was not affected. Left internal paralytic strabismus was still present.

By September the 19th (seventy-third day), *i. e.* thirty days after the onset of the hemiplegia, the left arm and leg had both almost recovered their normal state, the only paralysed muscles being the extensors of the left thumb and the peronei muscles of the left leg. This condition remained unaltered up to the time the child was discharged from hospital.

On September the 12th the child was allowed to be propped up in bed, and on September the 24th she was allowed out of bed in a chair. On October the 5th she was given her clothes when she could walk a little without assistance.

On her discharge from hospital on November the 25th, 1910, the condition of the left thumb and left foot was unchanged. She could not abduct her foot, and there was in consequence a little indecision with the left leg on walking. She was advised to have electrical treatment for the paralysed muscles.

The child, seen on March the 13th, 1911, having had electric baths, followed by massage three times weekly in the interval, showed the following condition: The extensors of the left thumb were still weak, and the flexors over-acting drew the thumb towards the palm. The child consequently picked up objects with this hand awkwardly. The hand grip was weak, but seemed to be a trifle stronger than it was four months previously. The muscles of the left arm and forearm seemed a little stiff, but all the movements were free. She could walk better than when she left the hospital, there being almost imperceptible dragging of the left foot; the peronei muscles were, however, still weak, so that the foot could not be thoroughly everted. No knee-jerks were obtainable on either side. The child's health was good and her mental condition excellent. The right arm and leg were quite normal; the heart appeared to be quite sound. The mother informed me that at the hospital where the child was undergoing treatment at the present time they held out hopes of the complete recovery of the affected muscles.

The only other case in which hemiplegia has been noted as occurring during an attack of diphtheria during the three years 1908, 1909, 1910, among 1364 cases of diphtheria admitted to the North-Eastern Hospital, was that of a child under the care of my colleague, Dr. E. G. Leopold Goffe, to whom I am indebted for the following notes:

A boy, aged $3\frac{1}{2}$ years, was admitted to hospital on February the 28th, 1910, on the fourth day of disease, with a moderately severe attack of diphtheria, the membrane being confined to the tonsils and the cervical adenopathy not very marked. An injection of 16,000 units of antitoxin was given on admission. The fauces were clear of membrane on the eighth day of disease. On the eleventh day there was paralysis of the palate shown by regurgitation of fluids through the nose on attempts at drinking. A mixture containing adrenalin (1 in 1000 solution in each dose) was given by mouth thrice daily from the day of admission—a practice frequently resorted to with a view of warding off, if possible, the early cardiac paralysis so much dreaded in severe cases of diphtheria. However, despite this, on the fifteenth day cardiac vomiting set in with marked pallor and enfeebled pulse, necessitating rectal alimentation.

Two days later the cantering rhythm was heard over the præcordial area, and the liver was much enlarged, the lower edge being on a level with the umbilicus.

On March the 12th, the sixteenth day of disease, complete right hemiplegia occurred. The right arm and leg were flaccid. No knee-jerks were obtained on the right side, and the right abdominal reflex was also absent. In the left leg knee-jerks could be elicited and the left abdominal reflex was present. Extensor response to plantar stimulation was present on both sides.

Diaphragmatic paresis set in on the eighteenth day of disease and became complete on the twenty-first—the day of death.

On the eighteenth day the right pupil was dilated; the day following there were opisthotonos and Cheyne-Stokes' respiration. Death occurred on March the 17th, the twenty-first day of disease, the end being ushered in by slight convulsions. No autopsy was made.

In this case the urine remained normal throughout, and with the exception of two rises to 100° F. the temperature was subnormal through the whole course of the disease.

The interest of these two examples of this rare complication of hemiplegia in diphtheria is increased by their both presenting the condition of early cardiac paralysis. In the case of diphtheritic hemiplegia recorded by Dr. J. D. Rolleston ('Review of Neurology and Psychiatry,' 1905, iii, p. 722) this condition also preceded by some days the onset of the hemiplegia—an interesting circumstance in view of the fact that in the few recorded cases of autopsy after diphtheritic hemiplegia embolism or thrombosis of the brain has generally been found.

Dr. Rolleston made a search through the whole of literature, and found a total of only 65 cases of hemiplegia following diphtheria recorded, thus showing how infrequently the complication is present. In these 65 cases right hemiplegia occurred in 38, and left in 22.

In my case there were no mental symptoms. As mentioned above, the child was particularly bright and cheerful even at the worst stages of her illness, and all through showed marked intelligence. Rolleston's case showed motor aphasia, the hemiplegia in this instance being in the right side.

Although it may be said that, as a rule, cases of early cardiac paralysis, that is, paralysis of the heart coming on some time during the second week (from the seventh or eighth to the fourteenth days), are generally fatal, some few do recover, but it is certainly very exceptional in such severe cases as the first of the two that I

have recorded. Thus at the North-Eastern Hospital during the three years 1908-10 there were noted 33 such cases of equal severity to my case among 1364 cases of diphtheria under treatment during that time. Of these, 32 were fatal. There were 11 cases in 1908, 7 in 1909, and 15 in 1910, giving a mortality percentage of 96·6. Amongst these 1364 cases paralysis of all kinds occurred in 326 instances, giving a percentage incidence of 23·90. Amongst the 326 cases of paralysis severe early cardiac paralysis was noted in 33 instances. Thus this form of paralysis occurred in 10·1 per cent. of all forms of paralysis, and in 2·4 per cent. of the total diphtheria cases. There are, of course, instances of milder forms of cardiac irregularity coming on in the early stages of diphtheria which all tend to recovery. I have not included these. As an example of the milder forms, I may mention that I have now under my care a severe case of diphtheria which within the second week of the disease had palatal paralysis, followed shortly afterwards by a typical *bruit de galop* lasting for some days, with irregular pulse, but in which no symptom such as vomiting, restlessness, or pallor occurred, the heart subsequently regaining its normal rhythm.

I am indebted to Dr. Thomson, Medical Superintendent of the North-Eastern Hospital, for permission to publish these cases.

Royal Society of Medicine.

SECTION FOR THE STUDY OF DISEASE IN CHILDREN.

Friday, May the 26th, 1911.

Dr. E. CAUTLEY, *President, in the Chair.*

A discussion was held on Dr. R. MILNE's paper on **Measles: Its Treatment and Prevention**, which had been adjourned from March the 24th. In his paper Dr. Milne advocated the treatment by inunction of the body with eucalyptus oil and the local application of 1 in 10 carbolic oil to the throat, by which means he maintained that infection could be prevented.

Dr. J. D. ROLLESTON, in opening the discussion, challenged Dr. Milne's statement as to the dangers of hospital treatment, giving instances of the good results obtained in those Paris hospitals in which individual isolation is practised. He thought that more convincing proofs of the efficacy of the treatment proposed were needed, and asked for the *rationale* of the method advocated. As the contagion was chiefly spread by discharges from the nose and eyes, especially during the pre-eruptive period, it was difficult to under-

stand what useful purpose could be served by inunction of the skin with eucalyptus oil and the application of carbolic oil, itself an antiseptic of very doubtful value, to the throat. Inunction of the skin, in Dr. Rolleston's opinion, was of very doubtful advantage in scarlet fever, and of still less value in measles. Dr. Milne further claimed that his treatment rendered disinfection unnecessary, but under ordinary circumstances the process was not required unless the patient died from broncho-pneumonia or some secondary infection. After further criticising Dr. Milne's statistics, Dr. Rolleston concluded that the author had failed to substantiate the claims which he had set forth in his paper.

Dr. BEZLY THORNE upheld the use of eucalyptus oil, having found it very beneficial in his early days. It was, however, open to the objections that patients disliked it and that it irritated the skin. He therefore substituted an aqueous emulsion of carbolic acid, which he used for scarlet fever, measles, and varicella, and gave eucalyptus oil internally, with the result that his cases ran a benign course and all danger of infection was prevented.

Dr. BIERNACKI said that Dr. Milne did not appear to have sufficiently distinguished between scientific evidence and information which could not be called scientific. Scarlet fever varied greatly in the intensity of its infection in different districts at the same time, and in the same district at different times. During a severe epidemic of measles he had tried Dr. Milne's method and found it a total failure. There had never been so many cross-cases at the hospital as when that treatment was being carried out. Nevertheless the fact that a treatment had been tried and failed was not a sufficient reason for refusing to try it, and he recommended that someone should try the method, quite independently, working under the same conditions as Dr. Milne had.

Dr. T. R. WHIPHAM dealt with the question of the conveyance of measles infection by a third person, such as a nurse, and asked whether a nurse doing duty in a ward could be so saturated with eucalyptus oil that she would not convey measles to another patient. He inquired at what period should the treatment be carried out. Was one to assume that every case with indefinite symptoms was a potential case of the disease, or should one wait until the characteristic signs were evident? In the latter case what was to prevent the spread of the disease during the incubation period? While if every indefinite case was to be treated early, one would be continually living in an atmosphere of eucalyptus. No suggestion as to the *rationale* of Dr. Milne's method had yet been advanced, nor as to how the internal administration of eucalyptus, as recommended by Dr. Bezly Thorne, acted.

Dr. MILNE replied at considerable length. He had issued a free invitation to the members of the Section and all interested to come and see his cases. After the use of the eucalyptus oil there was a decided odour of it in the urine. All the complications arose through secondary infections, but when the throat was treated early secondary infections never occurred. He was able to advance hundreds of testimonials in support of his position, and he would be glad to know how he could have done more than he had to have his system properly tested.

Dr. BEZLY THORNE, answering Dr. Whiphham, said that he assumed the eucalyptus oil acted by destroying the bacilli, particularly when it was taken internally, but he could no more explain how the eucalyptus oil acted in these cases than how quinine acted in malaria.

The following cases were also shown :

Dr. E. CAUTLEY: (1) **Pyloric Hypertrophy and Spasm** in a male infant, aged 10 weeks, who had weighed 6 lb. at birth. Fed on Allenbury No. 1 food he gained 1 lb. in the first week and then began to vomit. The vomiting became more severe and projectile in character, and the bowels were constipated. Feeding on whey, cream, and lactose had checked the vomiting and brought about an increase in weight, and the stools were normal. There was marked peristalsis of the stomach, extending to the duodenum, and the pylorus was palpable but not much enlarged. The stomach was not dilated, and it was thought justifiable to wait longer before advocating operation. (2) **Cerebral Sclerosis and Idiocy** in a girl, aged 2 years and 4 months, with no history or evidence of syphilis. The child was stated to have been normal until nine months of age, when she developed fits of opisthotonos and screaming. She was small and wasted, and had never been able to sit up or talk. There was opisthotonos and head-retraction, with general rigidity and spasmodic movements of the limbs. The knee-jerks were exaggerated, and Kernig's sign was present. The child was blind, but the eyes showed no abnormal features. The diagnosis lay between a sclerosis of post-natal origin, perhaps secondary to encephalitis, and cerebral palsy of the type known as cerebral spastic diplegia.

Mr. P. L. MUMMERY: (1) **Fatty Tumour in the Abdominal Wall.** (2) **Severe Tuberculous Peritonitis cured by Laparotomy** in a girl. When first seen the child was emaciated and anæmic, and the abdomen was distended with fluid. General treatment causing no improvement laparotomy was performed, when the peritoneum was found to be covered with tubercles. As the result of the operation the child had got quite well, and there was now no evidence of tuberculous peritonitis.

Mr. S. STEPHENSON: **Night-blindness with Peculiar Conjunctival Changes** in a boy. The subjects of this condition usually suffered from insufficiency of food, and the amount of hæmoglobin in the blood was always below normal. The relation of the condition to snow-blindness and keratomalacia was discussed.

The cases were discussed by Dr. W. EWART, Dr. G. A. SUTHERLAND, Mr. P. L. MUMMERY, and the PRESIDENT.

EPIDEMIOLOGICAL SECTION.

Friday, May the 26th, 1911.

Epidemiology of Poliomyelitis.—Dr. FREDERICK E. BATTEN said the purport of the paper was to state shortly the facts known in regard to poliomyelitis as an infective and epidemic disease.

He first defined the term "poliomyelitis," and used it in the wide sense as an infective disease which may affect any portion of the central nervous system, and give rise to a variety of symptoms dependent on the portion of the nervous system affected. The nature of the virus was then dealt with, and the works of Landsteiner, Popper, Levaditi, Flexner and Lewis were quoted as showing that the disease was transmissible from man to monkey

by inoculation, that it was transmissible from monkey to monkey, that the virus was not killed by glycerination and that it would pass the finest filter.

A list of past epidemics was given dating from 1881 to the present time. The disease was widely distributed over Europe and America, and occurred in Australia and probably in South Africa.

The factors common to all epidemics, viz. seasonal relationship, age-incidence, and mortality, were considered.

In the Swedish epidemic of 1905 Wickman showed that the school was a factor in the spread of the disease.

In the Massachusetts epidemic of 1909 it could not be shown that the school was a factor in the spread, but it was noticeable that of the 150 cases investigated, 62 were swimming or wading in water more or less contaminated by sewage. The question of animal infection was considered.

The curious nature of the infectivity of the disease was discussed in relation to the Steirmark epidemic, in which children living in the closest contact with the infected escaped infection, and on the other hand a child 30 kilometres removed from the nearest place was infected, and in whom all contact with an infected person could be excluded.

The epidemic occurrence of poliomyelitis in Great Britain was considered. The Upminster epidemic of 1908, the Bristol epidemic of 1909 were mentioned, and epidemics were reported in Carlisle, Maryport, Barrow-on-Furness, Melton Mowbray, Irthlingborough, Cerne Abbas and Tillicoultry in the summer of 1910.

From a series of forty-five cases collected at the Children's Hospital, Great Ormond Street, and at the National Hospital during the year 1904, in which the district from which the cases occurred and the month of onset were investigated, it was shown that the disease was widely distributed over London, and that the month of greatest incidence was August—corresponding to what has been shown in other epidemics.

The author concluded that since poliomyelitis has been shown to be a disease which was capable of being transmitted from person to person and was a serious detriment to health, it should be made notifiable. Isolation of the infected should diminish the incidence of the disease on the community.

The paper concluded with a list of some seventy-two epidemics of poliomyelitis up till 1910.

AUTHOR'S ABSTRACT.

Philadelphia Pediatric Society.

April the 11th, 1911, J. TORRANCE RUGH, M.D., President.

SYMPOSIUM UPON THE INFANT STOMACH.

Dr. ALFRED HAND, JUN., read a paper on the **Dietetic Management of Disorders of Gastric Digestion in Infants.** Dr. Hand referred to the importance of gastric digestion in infants as illustrated by the better prognosis in cases of malnutrition, in which there were no symptoms of gastric indigestion, as compared with those cases in which regurgitation and vomiting were present. After a brief discussion of the normal gastric juice

and its functions, it was shown that the influence of alkalies upon the digestion of milk depended upon the amount of alkali, small proportions delaying curdling of milk while large amounts prevented it entirely, so that the milk passed into the small intestine before a curd was formed. The diagnosis of the condition was easy except in infants a few weeks old, when hypertrophic stenosis of the pylorus must be borne in mind. In treatment it was important to find, and, if possible, remove the cause, for unless the cause was removed the condition would be persistent. But removal of the cause did not cure the condition necessarily, the complete cure being mainly dietetic, and often involving much time. Rules could not be laid down, for each patient must be studied individually. The percentage method was of great help.

Dr. J. CLAXTON GITTINGS described the **Shape and Position of the Infant's Stomach as seen in Frozen Sections**, exhibiting a series of bodies. From a study of hardened bodies of infants under one year of age, and from consideration of the embryonic and anatomical development of the abdomen and its contents, Dr. Gittings believed that the shape and position of the stomach of young infants varied considerably from those of adult life. His conclusions were as follows: (1) The stomach in healthy, well-nourished infants under one year occupies a more horizontal position than in adults. (2) The cardia is equally well fixed. (3) The pylorus lies nearer the mid-line and is less movable. (4) The stomach often lies entirely to the left of the mid-line; at most but 1-3 cm. of the vestibule (or antrum) and the pyloric canal lie to the right of the mid-line. (5) The most horizontal portion of the stomach is the vestibule. (6) The greater curvature for approximately one half of its length is more or less horizontal, and does not show any marked tendency to become vertical until it has passed well up under the left costal arch. (7) The lesser curvature is much more oblique than vertical. (8) The lowest pole of the stomach probably rarely descends lower than 2-4 cm. below the pylorus and probably never below the umbilicus. (9) The most important factors which determine the obliquity of the lesser curvature are; the breadth of the upper abdomen, the width and oblique lower border of the liver, and the large volume of the liver. (10) The most important factor which determines the position of the greater curvature is the more or less fixed, transverse or slightly convex position of the colon and mesocolon, which is induced by the crowding of the coils of small intestine and by the presence in the lower abdomen of viscera which belong, and later are contained in the cavity of the true pelvis. (11) The most important single factor in altering these conditions is the assumption of the erect position. (12) The shape and position of the stomach play an inconspicuous rôle in the causation of vomiting. Since the full or partly filled stomach is not tubular, the time-honoured explanation of the frequency of vomiting in sucklings is not applicable. (13) Defective valvular action at the cardiac orifice probably plays an equally unimportant rôle in the causation of vomiting. (14) X-ray examination is the only reliable means of determining the lower border of the stomach *in vivo*.

Dr. EDWARD B. HODGE described the **Surgery of the Infant Stomach**. He said that the field was narrow, owing to the influence of the age—under two years. That practically exempted the infant from many diseases and injuries and greatly increased the difficulty in eliciting signs and symptoms of those that did occur. Hence, injuries of the stomach, perforating gastric

and duodenal ulcers, etc., need only be mentioned. *Foreign bodies* in the infant stomach followed closely the symptomatology and treatment, usually conservative, seen in older children. The same might be said of *cicatricial contraction of the œsophagus*. Gastrostomy was of more value when performed earlier than was usually the case. *Congenital obstruction of the œsophagus* was very rare and generally fatal in spite of gastrostomy. *Infantile stenosis of the pylorus*: The surgeon should be called in consultation earlier in order to obtain a more favourable time for operation. Recent statistics of gastro-jejunostomy were much more favourable than those up to a few years ago. With Scudder, he believed the operation indicated on failure of efficient medical treatment in the cases of stenosis with pyloric tumour. If tumour was not present, the operator's individual experience would make him decide between gastro-jejunostomy and some form of pyloroplasty, preferably that of Nicoll. Scudder's* recent paper was of great interest on the questions of persistence of the pyloric tumour after operation, permanence of the stoma, and the practically normal fat and proteid metabolism found.

Dr. T. WOOD CLARKE, of Utica, N. Y., by invitation, read a paper on the **Value of Gastric Analysis in the Diagnosis of Digestive Disturbances of Infancy**. He said that all the functional activities of the adult stomach occurred in the infant, but in a lesser degree. Hydrochloric acid, pepsin and rennin were present from birth. Owing to the power of casein to absorb HCl, free acid was not found in the normal infant's stomach for at least one and a half hours after a milk feeding. The acidity steadily increased from birth. It also increased during digestion. Pepsin was always present in excess over the acid. The HCl in the child's stomach was almost exclusively in combination with casein. The estimation of the organically combined chlorides was of especial importance in analysis. Unfiltered contents must be used. A study of the findings of various authors showed the normal stomach contents of the infant to be as follows: One hour after milk the total acidity averaged from 20 to 28; combined chlorides, 11 to 19; free HCl, 0. One half hour after barley-water the total acidity averaged 9, the free HCl 2 to 4. One half hour after tea or lactose solution, total acidity 7; free HCl, 4. In marasmus cases there was hypo-acidity; chronic vomiting cases might show hypo-acidity, or hyper-acidity. In pyloro-spasm there was usually a very high acidity. Lime-water added to a feeding did not reduce the amount of HCl in the stomach as it stimulated to further secretion. Sodium citrate or oils reduced gastric acidity. Saline *per rectum* had been found to inhibit gastric secretion, and this had been used successfully in the treatment of pylorospasm. Test feeding and gastric analysis would probably prove a distinct aid in the diagnosis of the digestive disturbances of infancy. The work, however, was in its infancy and required further investigation and practical application. Uniformity of method was of the utmost importance in such investigations.

Dr. D. J. MILTON MILLER, of Atlantic City, N. J., in opening the discussion, said that of late years, in the infant as in the adult, they had come to look upon the stomach as taking but a minor part in the process of digestion, being mainly a reservoir for permitting the food to pass slowly into the intestine, where the major part of digestion was carried on and completed. Yet Dr. Miller agreed with Dr. Hand that they could not get along without the stomach: if it failed in acute or chronic disease they had lost their sheet-

* Scudder, C. L., 'Surg. Gyn. and Obstet.,' 1910, xi, p. 275.

anchor. Its usefulness became apparent when they considered that, in abnormal conditions of the organ, they were deprived of the means whereby the food was not only partially prepared for, but was also introduced slowly into the duodenum. Such researches as those of Dr. Gittings were of material value. Dr. Miller had long ago arrived at the conclusion that it was impossible to determine the position and shape of the infant's stomach by ordinary methods, such as filling with air, water, auscultatory percussion, etc. He believed that the only way to establish abnormal positions or dilatation of the stomach was by the X ray. Dr. Miller was sorry that Dr. Gittings had not given some information as to the capacity of the stomach. The usual method, measuring capacity after death, did not seem reliable. Yet it is an interesting fact that such measurements tallied very closely with the amounts determined by clinical observation. Dr. Miller said that they should familiarise themselves with the proper methods of gastric analysis, for determining the presence of HCl, etc. It had always been taught that from 25 to 50 per cent. of lime-water hastened the evacuation of the stomach. But gastric analyses showed that the opening of the pylorus was due to acid. Yet, in hyperacidity, emptying the stomach was delayed. Dr. Miller thought that hyperacidity was a very potent, if not the principal factor in causing the symptoms of pylorospasm or pyloric stenosis. Thus it seemed possible that varying degrees of acidity might cause varying degrees of obstruction; hence the practical value of gastric analysis in enabling one to detect and correct the earlier stages of what might develop into a serious affection. One might be able to distinguish the delayed motility due to fat from that due to hyperacidity and thus obtain valuable indications for treatment. Diet occupied a high, if not the principal place in the treatment of infantile gastric disorders. Careful examination of the fæces was also important. No set rules could be followed; every case must be judged for and by itself. Fat left the stomach last, delaying the emptying of the organ, and was a greater source of trouble than the proteids; hence the value of skim milk, butter-milk, whey, and even condensed milk in the gastric disorders of infants. Some very troublesome cases whose struggle to digest cow's milk had made their lives one long trail of misery, would often improve when they reached an age when they could digest other food than milk, which to them was a poison. The human breast was curative in many cases of difficult digestion in infants, even as old as one year. Finally, an infant should never be fed when its stomach was full or contained food. By passing the tube one could discover when the stomach was empty and should feed only when it was found empty.

Dr. CHARLES A. FIFE agreed with Dr. Hand that very few formulæ were needed. Modifications of less than one half present unnecessarily complicated the system of percentage feeding. It was becoming more and more evident that the dangers of high protein feeding had been exaggerated, and that many of the digestive disturbances formerly attributed to them were more likely due to the fats. This warranted a simplification of the methods. In fact, mere dilutions of whole milk or top milks with varying amounts of boiled water and the addition of sugar met most of the requirements. The questions of amount of food and of intervals of feeding received scanty attention that evening, though all of the members would probably admit that these two problems were fully as important as the mooted point of quality. How often in cases of indigestion, atonic dyspepsia, intestinal indigestion and athrepsia was there a history of overfeeding both as to quantity and quality? Pathologists continually reported that the stomachs in

the malnutrition cases were enormously dilated, thin-walled and apparently atrophic. It was not unreasonable to expect that overfeeding resulted in gastric dilatation, lessened motility, deranged gastric, intestinal, pancreatic and hepatic secretions, absorption of decomposition products, faulty metabolism and death. If physicians would more frequently check their formulæ by determining the caloric values they would probably see fewer atrophic infants. Dr. Fife asked Dr. Clarke if he had found organic acids in the stomach contents of babies with retarded gastric motility.

Dr. GITTINGS said that the so-called modern view as to the functions of the stomach seemed the more rational when one considered that the ducts of these most important organs, the pancreas and liver, emptied into the intestines, and when one compared the actual extent of secreting surface in the stomach with that in the upper intestine. The main function of the stomach would seem to be principally motor, whereby the food was thoroughly mixed, acidified and softened, to be delivered by the pylorus at proper intervals to the much more important digestive action exerted in the intestine. Symptoms originated from inability of the stomach to empty itself at proper intervals or in a proper manner. That the atrophic infant who retained his food had a better chance than his more unfortunate brother who rejected it did not prove the greater importance of gastric digestion as compared with gastric motility. Several years ago Dr. Gittings had started a series of investigations in the gastric contents in infancy, but from the varying results it seemed hopeless to draw any significant conclusions. That clinical indications for treatment could be obtained from the use of the stomach-tube, however, was more than sufficient justification for its much wider use.

Dr. A. H. DAVISSON said that he was strongly of the impression that a too high percentage of fat in their percentage feeding had been used and was a cause of indigestion; a high proteid could be well taken, more especially if the proteid was started low and run up quickly. He had had marked success in cases where he had used whole milk and a diluent only, starting the mixture very weak, but increasing the strength quickly so that a high proteid was soon reached with a fat percentage that was not much in excess of the proteid. For years he had used lime-water very little, and seldom as an addition to a modified milk.

Dr. CLIFFORD B. FARR said that he also had had satisfactory results from titrating unfiltered stomach contents, so long since recommended by Martius. He explained the manner in which the pylorus was kept closed in pylorospasm by the generally accepted hypothesis that the excess of acid which on the stomach side caused the pylorus to open, on the duodenal side caused it to close again and to remain closed until the alkaline reaction was restored.

Dr. HAND said that Dr. Clarke's results and his remarks on the strong affinity between casein and HCl bore out what Dr. Hand said with reference to the presence of curds in the stools when very low percentages of proteids were given; the relative excess of acid after the casein had been precipitated acted upon the curd to toughen it so that it was indigestible; increasing the strength of the mixture gave more casein to combine with the acid, the curds were softer, were digested easily, and none appeared in the stools.

Dr. GITTINGS added that investigations as to the capacity of the stomach had not been undertaken, in order that the members of the Society might see the position and shape of the stomach exactly as they existed at the time the bodies were injected.

Dr. CLARKE added that in those cases in which he had given lime-water mixtures, hard tough curds were found, and it was almost impossible to secure all of the stomach contents on this account. When milk and water were used, there were also curds but not nearly such tough ones. Lime-water did not accelerate the motility and did not increase the acidity. No trace of lactic acid was found in normal babies. Langstein had found peptones in the normal infant stomach. Dr. Clarke found a slight increase of peptone nitrogen if the test meal was examined at once; this increased tremendously if the contents were placed in the thermostat, showing proteolytic power but little proteolytic activity in the stomach. He also believed that the pylorus was kept closed by the amount of acid in the small intestine in cases of pylorospasm. He reiterated the statement that, with uniform methods, scientific results of some value should be obtained from gastric analysis in infants.

Société de Pédiatrie, Paris.

April the 25th, 1911. (Bulletin No. 4.)

Nageotte's Method of Counting Corpuscles, etc., in Cerebro-spinal Fluid.—MME. NAGEOTTE showed the advantages of a direct count without centrifugalisation. The fluid as soon as obtained was slightly tinted by stirring with a rod dipped in a solution of crystal violet and then poured into a special cell holding 100 or 50 cubic mm. and 1 or $\frac{1}{2}$ mm. in depth, covered with a slip, and examined with a weak object glass and strong eyepiece (Obj. C, oc. 4, Zeiss).

Emotional Jaundice.—M. MOURIQUAND reported a case in a girl, aged 18 years, who, having previously suffered from gastric symptoms, was attacked with jaundice twenty-four hours after seeing a woman knocked down by a tramcar.

The Value of Radiography in the Diagnosis of Hypertrophied Thymus.—MM. FERRAND and CHATELIN reported four cases to show that when typical, the shadows of the thymus and thoracic glands had respectively very marked characteristics. The thymic shadow was median and merged in the cardiac shadow, which it distorted and enlarged, especially above and to the left, bounded by sharp outline, of equal intensity in its whole extent. The shadows of the thoracic glands were less often and less definitely median, situated lower and of unequal intensity, accompanied by outlying shadows. They were then easily recognisable. When thymic hypertrophy and adenopathy co-existed correct interpretation was impossible, and radioscopy might then be as fallacious as clinical examination. In any case radioscopy only afforded information as regards the breadth of the thymus and not as regards to thickness. On the other hand, it was not always the largest thymus that caused trouble. It was also possible that the large vessels at the base of the heart, dilated by the pressure exercised on them by the thymus, might play some part in the size of the shadow (radiographs are figured in the 'Bulletin' in support of these views).

Aortic Dilatation.—MM. HALLÉ and SCHREIBER showed a boy, aged

5 years, whose heart presented the following peculiarities: On palpation there was a marked thrill at the base of the præcordial region; on auscultation there was heard over the same area a murmur obliterating the first sound of the heart. The right radial pulse was bounding, with exaggerated tension; the left, on the contrary, could be felt with difficulty. There were no signs of aortic insufficiency. The liver was small. On radioscopic examination the heart seemed to lie less obliquely than normal; there was also a deep shadow passing away to the left. Aortic pulsation was very distinctly seen. The case was undoubtedly one of dilatation of the aorta chiefly affecting the transverse portion of the arch. The ætiology was obscure; neither syphilis, paludism, nor rheumatism could be adduced. There was frequently no definite ætiology in the aortic dilatation of children. In a small number of cases the dilatation was distinctly connected with rheumatism, but syphilis was most frequently absent, as was proved in this case by the Wassermann reaction.

The Biuret Reaction in Febrile Infections.—M. TRIBOULET described his technique. A normal stool did not give this reaction. When positive it indicated either the presence of heterogeneous undigested albumin (enteric dyspepsia of certain infantile eczemas), or in infectious conditions an intestinal catarrh (tuberculous enteritis, typhoid fever, measles, pneumonia, etc.). The Biuret reaction was useful as a means of information as to the possibility of feeding patients suffering from infectious disorders or the necessity of submitting them to a rigorous diet.

Simple Chronic Infantile Nephritis.—M. MERKLEN reported a case of this kind. Albuminuria was noticed at the age of 2 years; it disappeared and reappeared several times until the age of 10, was entirely absent from 10 to 13, then there were several attacks with disturbance of the general health at the ages of 13, 15½, 17 and 18 years, when it finally disappeared under the influence of lactate of strontium. It was evidently a case of organic, not orthostatic, albuminuria.

The Influence of Thyroid Treatment on Body-weight and Growth in Rickets.—MM. VARIOT and PIRONNEAU reported five cases in which thyroid administration had a markedly beneficial effect. Of three cases who were below the average height by 8 to 10 cm., the first gained 3 cm. in two months, the second 3·5 cm. in the same time, and the third 4·5 cm. in seven weeks with an interval of two and a half months without treatment. In two other cases with diaphysial curving in which the deficiency of growth was 11 to 20 cm., the authors reduced it by 3·4 cm. in four months and 2 cm. in five weeks. The cases got thinner during the early part of the treatment but afterwards increased regularly in weight, which was, however, less favourably influenced than the height. Another point deserving attention was the good effect on the nervous system and especially on the cerebral activity.

VINCENT DICKINSON.

SEVENTEENTH INTERNATIONAL CONGRESS OF MEDICINE.

At the meeting held on April 21st, 1911, under the Presidency of Dr. F. W. Pavy, at the Royal College of Physicians, it was decided to accept the

proposal of the Executive Committee fixing the date of the Congress to be held in London from August the 6th-12th, 1913.

Sir Thomas Barlow, K.C.V.O., will be President of the Congress, Dr. W. P. Herringham, 40, Wimpole Street, W., General Secretary, and Sir Dyce Duckworth and Mr. G. H. Makins, Treasurers.

All communications concerning the organisation of the Congress should be addressed to Prof. H. Burger, Vondelstraat 1, Amsterdam, or to the Bureau de la Commission Permanente des Congrès Internationaux de Médecine, Hugo de Grootstraat 10, The Hague.

THIRD INTERNATIONAL CONGRESS FOR THE STUDY AND PREVENTION OF INFANTILE MORTALITY.

THIS Congress will be held in Berlin from September the 11th to the 15th, 1911. Besides the presentation and discussion of scientific and practical papers, the programme will include an inspection of the measures taken in Berlin for the reduction of infantile mortality, as well as a visit to the International Hygiene Exhibition in Dresden, where a special department is being devoted to infant hygiene.

Abstracts from Current Literature.

Medicine.

Thyroidal megrim in childhood ('*Rev. d'Hyg. et de M'd. Inf.*,' 1911, x, p. 113).—**Léopold-Lévi** and **H. de Rothschild**, on an examination of ten cases, consider that megrim in childhood is due to the thyroid gland, and support their contention for the following reasons: (1) The ten cases narrated all showed immediate improvement from thyroid medication, which when abandoned resulted in reappearance of the attacks. Cure resulted when the treatment was continued for a sufficiently long time. (2) The children affected showed thyroidal instability, which manifested itself by nervousness, loss of appetite, constipation, retardation of development—physical and intellectual. There may be increase or decrease of growth of hair. In some the testicles were undeveloped. (3) There was no predominance in favour of the female sex. (4) It most frequently occurs between eleven and twelve years of age. (5) In most cases there is a similar hereditary taint, but in others the progenitors, instead of suffering from megrim, have shown symptoms of a neuro-arthritis diathesis. (6) It shows itself by unilateral headache (it may be bilateral), paroxysmal and intense, and may be accompanied by nausea, vomiting, and vertigo. (7) The attacks may be produced by various causes—hunger, fatigue, ingestion of certain articles of diet, emotions and the like. (8) The duration lasts from ten to twelve or even twenty-four hours. (9) Urticaria is far from rare; eczema and psoriasis have also been noted. (10) It is due to a pathological condition in the nucleus of the trigeminus. (11) Any cause that reduces the thyroidal

5 years, whose heart presented the following peculiarities: On palpation there was a marked thrill at the base of the præcordial region; on auscultation there was heard over the same area a murmur obliterating the first sound of the heart. The right radial pulse was bounding, with exaggerated tension; the left, on the contrary, could be felt with difficulty. There were no signs of aortic insufficiency. The liver was small. On radioscopic examination the heart seemed to lie less obliquely than normal; there was also a deep shadow passing away to the left. Aortic pulsation was very distinctly seen. The case was undoubtedly one of dilatation of the aorta chiefly affecting the transverse portion of the arch. The ætiology was obscure; neither syphilis, paludism, nor rheumatism could be adduced. There was frequently no definite ætiology in the aortic dilatation of children. In a small number of cases the dilatation was distinctly connected with rheumatism, but syphilis was most frequently absent, as was proved in this case by the Wassermann reaction.

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SEVENTEENTH INTERNATIONAL CONGRESS OF MEDICINE.

At the meeting held on April 21st, 1911, under the Presidency of Dr. F. W. Pavy, at the Royal College of Physicians, it was decided to accept the

proposal of the Executive Committee fixing the date of the Congress to be held in London from August the 6th-12th, 1913.

Sir Thomas Barlow, K.C.V.O., will be President of the Congress, Dr. W. P. Herringham, 40, Wimpole Street, W., General Secretary, and Sir Dyce Duckworth and Mr. G. H. Makins, Treasurers.

All communications concerning the organisation of the Congress should be addressed to Prof. H. Burger, Vondelstraat 1, Amsterdam, or to the Bureau de la Commission Permanente des Congrès Internationaux de Médecine, Hugo de Grootstraat 10, The Hague.

THIRD INTERNATIONAL CONGRESS FOR THE STUDY AND PREVENTION OF INFANTILE MORTALITY.

THIS Congress will be held in Berlin from September the 11th to the 15th, 1911. Besides the presentation and discussion of scientific and practical papers, the programme will include an inspection of the measures taken in Berlin for the reduction of infantile mortality, as well as a visit to the International Hygiene Exhibition in Dresden, where a special department is being devoted to infant hygiene.

Abstracts from Current Literature.

Medicine.

Thyroidal megrim in childhood ('*Rev. d'Hyg. et de Méd. Inf.*,' 1911, x, p. 113). —**Léopold-Lévi** and **H. de Rothschild**, on an examination of ten cases, consider that megrim in childhood is due to the thyroid gland, and support their contention for the following reasons: (1) The ten cases narrated all showed immediate improvement from thyroid medication, which when abandoned resulted in reappearance of the attacks. Cure resulted when the treatment was continued for a sufficiently long time. (2) The children affected showed thyroidal instability, which manifested itself by nervousness, loss of appetite, constipation, retardation of development—physical and intellectual. There may be increase or decrease of growth of hair. In some the testicles were undeveloped. (3) There was no predominance in favour of the female sex. (4) It most frequently occurs between eleven and twelve years of age. (5) In most cases there is a similar hereditary taint, but in others the progenitors, instead of suffering from megrim, have shown symptoms of a neuro-arthritis diathesis. (6) It shows itself by unilateral headache (it may be bilateral), paroxysmal and intense, and may be accompanied by nausea, vomiting, and vertigo. (7) The attacks may be produced by various causes—hunger, fatigue, ingestion of certain articles of diet, emotions and the like. (8) The duration lasts from ten to twelve or even twenty-four hours. (9) Urticaria is far from rare; eczema and psoriasis have also been noted. (10) It is due to a pathological condition in the nucleus of the trigeminus. (11) Any cause that reduces the thyroidal

function and thus increases hypo-thyroidism, and thus excites the above centre, can produce an attack. (12) Seventy-five per cent. of cases of megrim in the adult are due to the thyroid gland.

F. R. B. ATKINSON.

Congenital goitre (*'Med. Record,'* 1911, I, p. 323).—**Edward W. Peterson** records the case of a girl who, in January, 1905, when aged 5 weeks, was seen to have a swelling on the right side of her neck. The tumour, which filled the submaxillary space, and extended downwards nearly to the clavicle, was dissected out. Nine days afterwards a convulsion occurred, which was repeated on the thirteenth and fourteenth days. Tetany was present. A histological examination was made by Dr. Sondern, who reported that the tumour showed adenomatous overgrowth and colloid degeneration of the thyroid gland. As it was believed that all the thyroid had been removed thyroid extract was administered, and within twenty-four hours the tetany ceased. Since then, except for minor ills, the patient had been healthy.

FREDERICK LANGMEAD.

The parathyroids not responsible for tetany in children (*'Ugesk. f. Læger,'* Dec. 30, 1910. *Abstr. 'Journ. A.M.A.'*).—**Jørgensen** criticises recent communications on the connection between the parathyroids and the development of tetany. He shows that Yanase's material does not sustain his assumption in regard to the causal rôle of the parathyroids, as lesions in these glands were discovered in only nine of the fifty children he examined. The other changes in the glands described were too trivial to be considered as having causal significance. In a case of tetany in Jørgensen's experience with fatal laryngo-spasm, the four parathyroid glands were found entirely normal even in 1000 sections under the microscope, and he cites other authors who have found the glands normal in fatal cases of tetany.

T. R. WHIPHAM.

Hypertrophy of the thymus gland in children, and sudden death (*'La Semana Medica,'* October 13, 1910).—**Negrotto** treats the question generally, and describes the following case: A female child, aged 2 years, was seen in the out-patient room for dyspnoea. Cyanosis fairly well marked, the lips blue, and the face livid. No signs of disease in the chest or throat. The examination had not lasted five minutes, and whilst they were just preparing for intubation the child expired. At the post-mortem examination the thymus gland was found to measure 9 cm. long, 3 cm. wide, and nearly 1 cm. thick. It weighed 36 gm. It covered the trachea, the large vessels at the base of the heart, the anterior surface of this organ, and reached to the anterior borders of both lungs.

M. D. EDER.

Sudden death following prophylactic dose of diphtheria antitoxin (*'Boston Med. and Surg. Journ.,'* 1911, I, p. 503).—**S. F. McKeen**.—A girl, aged 17 years, well developed but of pasty complexion, received, a prophylactic dose of 500 units of antitoxin in her deltoid, as did also her mother and sister. Fifteen minutes after the injection death occurred with symptoms of collapse. There were no convulsions. The necropsy showed a persistent thymus weighing about 25 gm., the left lobe extending to the third costal cartilage, numerous lymph-nodes in the mesentery, swollen Peyer's patches, an enlarged spleen and small adenoids. The other organs were normal. The anatomical diagnosis was therefore status lymphaticus.

The following history was subsequently obtained: The father had died of heart disease. The mother suffered from hay fever and chronic rhinitis, but neither she nor the sister showed any ill-effects from their injection. The patient had suffered on and off from asthma, though not recently, and for some time had had slight watery rhinitis. J. D. ROLLESTON.

Supra-renal insufficiency in infectious disease (*Arch. de Méd. des Enf.*, 1911, xiv, p. 46).—**J. Comby**.—In the infectious diseases of children grave symptoms may suddenly occur, *e. g.* asthenia, vomiting, abdominal pain, feeble pulse, and cold extremities. These phenomena, which were once attributed to cardiac collapse, myocarditis, bulbar inhibition, or neuritis of the vagus, are now regarded as due to supra-renal insufficiency. Post mortem lesions of the supra-renals have been found, especially hæmorrhages. As prophylactic and curative treatment the oral or subcutaneous administration of adrenalín is recommended. J. D. ROLLESTON.

Supra-renal tumours and precocity (*Liverpool Med.-Chir. Journ.*, 1911, xxxi, p. 116).—**E. E. Glynn** and **R. C. Dun** record a case in a child, aged 5 years, whose appearance was that of a girl about the age of puberty. She was tall, fat, and flabby, with a profuse growth of hair on the scalp, upper lip, pubes and back. The abdomen was enlarged, chiefly on the right side, where a tumour could be felt. No abnormal pigmentation was noted. Death, preceded by convulsions, occurred suddenly four days after admission to hospital. At the necropsy the right supra-renal was found to be replaced by an irregularly lobulated tumour weighing 2 lb. 12 oz. There were no metastases. Microscopically the most striking feature was the variation in size and shape of the cells, and, to a much less extent, the variation in the number of small vessels and the amount of fine reticulum.

J. D. ROLLESTON.

Hyperfunctioning of ovaries or testicles as a cause of rickets (*Zentralb. f. Gyn.*, Jan. 21, 1911. *Abstr. 'Journ. A.M.A.'*)—**Stocker** implanted in a two-weeks' calf the ovaries from a healthy cow that had calved once. In a few weeks the calf developed a picture resembling in every respect that of rachitis, while the control calf under identical conditions otherwise was strong and lively. These findings and experimental research suggest that rachitis is due to excessive functioning of the ovaries or testicles, and that treatment on these lines might prove effective. It has certainly displayed efficacy, he says, in the one clinical case in which he has applied it to date. The patient was a girl, aged 17 years, with pronounced rachitis and pains in the bones. She was given the milk of a castrated cow, and in a few days the pains disappeared, and she began to increase in stature.

T. R. WHIPHAM.

Malarial infantilism (*Rev. de Méd.*, 1910, xxx, p. 802).—**H. de Brun**, after twenty-five years' residence in Syria, thinks that he is justified in regarding malaria as one of the chief causes of infantilism. In proof of this he describes in detail forty cases. All had had malaria in infancy, and the majority still had attacks of intermittent fever on admission to hospital. In thirty-eight the spleen was enlarged; in the two in which it was almost normal there were intense anæmia and febrile attacks which were cured by quinine. The patients showed other visceral or blood changes characteristic of malaria, *e. g.* hypertrophic, or more rarely atrophic, cirrhosis of the liver,

myocarditis, nephritis, apical pneumonia and anæmia. Plasmodia were found in every case in which the blood was examined. All the patients were natives of malarious localities. They were all remarkable for their short stature, small size of their genitals, and absence of any sign of sexual power. Most of them presented an enormous abdomen, which formed a striking contrast to their slender limbs. In the majority the intelligence was decidedly below the average. Some might be regarded as examples of Lorain's and others of Brissaud's varieties of infantilism, but none were perfect models of either type. In answer to the question as to how malaria produces infantilism, the author replies that it is an acquired condition and not a congenital defect, and is due to an early infection with malaria which involves all the organs concerned with growth, especially the testes, thyroid, and probably also the hypophysis and suprarenals.

J. D. ROLLESTON.

Otology, Rhinology, and Laryngology.

The climatic indications of Egypt in otology and laryngology (*New York Med. Record*, 1911, 1, p. 436).—**Goldmann** recommends the climate of Egypt in cases of middle ear suppuration, sinus suppuration, ozæna, and adenoids.

MACLEOD YEARSLEY.

The treatment of 100 cases of suppurative otitis media (scarlatinal) by means of bacterial vaccines (bacterins) (*New York Med. Journ.*, 1911, 1, p. 755).—**J. A. Kolmer** and **P. G. Weston** report upon cases in the Philadelphia Hospital for Contagious Diseases. The best time for commencing the treatment was usually from the eighth to the sixteenth day after onset of discharge. The organisms were *Staphylococcus aureus* and *albus*, *Streptococcus pyogenes*, *Bacillus pyocyaneus*, and a pseudo-diphtheria (non-virulent) bacillus (in 57 per cent. of cases). Autogenous vaccines were used in all but one case. Mixed vaccines were never used, but if two organisms were found they were isolated, and a vaccine prepared from each. Initial dose was small, and repeated in five to eight days. Frequency of dose was determined by the clinical course. The only other treatment used was cleansing of the meatus to ensure drainage. By comparison with cases treated in the usual manner, the vaccine method cured 21·66 per cent. in from one to thirty days, as compared with 7·46 per cent. by other methods. Continued high fever, acute nephritis, toxæmia, and other intercurrent infections were deemed contra-indications.

MACLEOD YEARSLEY.

The treatment of otitis media purulenta and mastoiditis in infants (*New York Med. Journ.*, 1911, 1, p. 271).—**John Randolph-Page** emphasises the great importance of attending to suppurating ears in infants. If early recognised and promptly treated an operation on the mastoid can often be avoided. Of eighty-seven cases of acute purulent otitis media seen in a year at the Babies' Hospital, New York, only three were operated on for mastoiditis. Throughout the winter the ears are examined in every case, and the red and bulging membranes are incised and treated with installations of hydrogen peroxide and boric acid irrigations three- or four-hourly from the beginning. Mastoiditis can in many instances be prevented by such means, but early diagnosis is necessary, and this can only be accomplished by the routine examination of the ears of all sick

children. If mastoiditis has developed, the question of attacking it at once before the infant's vitality has been lowered by septic absorption must be seriously considered. The persistence of a profuse discharge after careful treatment has been pursued for a reasonable time warrants the serious consideration of the advisability of a post-aural operation. A high mortality after operations on the mastoid is more often due to neglect of the ear condition before operation than it is to the operation itself.

J. ALLAN.

Rosenmüller's fossa and the middle ear (*The Hospital*, 1911, XLIX, p. 579).—**Macleod Yearsley** gives a short clinical lecture drawing attention to the importance of the lateral recess of the naso-pharynx in diseases of the middle ear. The conditions which may occur in Rosenmüller's fossa are pointed out: (1) The occurrence of "soft" adenoid masses, keeping up chronic inflammation in the Eustachian tubes, and mechanically interfering with the action of the tubal muscles and the venous return from the tympanum; (2) the presence of bands and adhesions; (3) the presence of small, irregular, scattered masses of adenoid tissue.

AUTHOR'S ABSTRACT.

The prophylaxis of deafness in schools (*L'Echo Méd. du Nord*, 1911, xv, p. 185).—**Gaudier** and **Lien**.—Apart from central or congenital deafness, 99 per cent. of the cases are due to nose and throat troubles. In the former, nasal stenosis hinders the ventilation behind and favours the stasis of mucus there, producing tonsillar enlargement and catarrh of the cavity of the tympanum. This may heal rapidly if the organisms are benign, more slowly if there are complications, or if the pathological agent is very virulent, such as scarlet fever, erysipelas, etc. The first may cause only a passing deafness, but the last one may produce an intermittent deafness which may become permanent. About 56 per cent. of school-children have normal hearing, 10 per cent. are markedly deaf, and 33 per cent. show some defect of hearing. It is found that the places taken by scholars have a definitely inverse proportion to their deafness. It is of the greatest importance for children to use a handkerchief properly, and this should, if possible, be of paper, which can be burned after use; nasal respiration should be encouraged, and all impediments to it removed, if necessary by operation.

J. PORTER PARKINSON.

Nasal diphtheria in infants (*Med. Record*, 1910, II, p. 926).—**G. D. Scott** considers this condition to be not uncommon, but often overlooked. Cause, Klebs-Loeffler bacillus; predisposing factors, rachitis and malnutrition. Absolute diagnosis is only possible by means of the microscope, and nasal diphtheria is never absolutely pure. The condition may be primary or secondary, and passes through three stages—catarrhal, fibrinous, and diphtheritic catarrhal—the last of which might persist for weeks, owing no doubt to the implantation of the specific organism in the accessory sinuses. The nasal type of diphtheria may be very contagious, hence isolation is of paramount importance, together with immunisation of other members of the family with antitoxin. In treatment the author strongly opposes nasal douches, but inserts pledgets of wool moistened with warm raw pineapple juice in the nostrils. He also describes the best method of using antitoxin.

MACLEOD YEARSLEY.

The throat specialist and preventive medicine (*'Charlotte Med. Journ.,'* 1911, LXII, p. 80).—**Davis** emphasises the following points: (1) That due importance by the throat specialist is not given to the prophylactic feature of throat work in the early life of the individual, and that, therefore, it has not the proper recognition from the profession as a whole and the laity. (2) That the pathological processes about the throat and their effects are strong predisposing factors in the cause of all the air-borne diseases. (3) That adenoids are responsible for mouth-breathing is a prime factor in the inception of contagious and infectious diseases, and in the making of pathological conditions in the faucial region. (4) That the examination for, and removal of, adenoid tissue during the first year of life is an important preventative measure. (5) That an endeavour should be made to preserve the faucial tonsil in its normal state for its function as a protector against microbic invasion. This, by thorough local treatment for each infection, and a consideration of the factors affecting its health as next mentioned. (6) That in keeping with its endeavours in the interest of preventive medicine it is the duty of the medical profession to emphasise before health boards, school boards, asylums, parents, and in every avenue reaching the life of the child, the importance of the following simple methods: (a) Providing prompt correction for mouth-breathing (in infancy if it exists); (b) giving daily care to teeth and gums, and daily use of proper antiseptic mouth-wash; (c) abundance of outside air in sleeping-room, regardless of season and age.

MACLEOD YEARSLEY.

The tonsil (*'Charlotte Med. Journ.,'* 1911, LXII, p. 1).—**J. A. White**.—Has it any function? Is it a menace to the organism as a focus of infection? Is the present holocaust of tonsil necessary? What is the best method of removal when operation is clearly indicated? The writer asks these questions and tries to answer them, the first two in the affirmative apparently. As regards the third, he does not seem to differ from recognised surgical procedure. The author is wrong in stating that enucleation is rarely done in England. Careful reading of the paper does not enable one to discover what is advised as the best method of removal.

MACLEOD YEARSLEY.

Functions and utility of the tonsil (*'La Polyclinique,'* November 1, 1910. *Abs'r. in 'Amer. Journ. Obstet. and Dis. of Women and Children'*).—**Gabriel Hicguet** considers that previous theories have failed in scientific support. The normal tonsil gradually retrogresses, and finally becomes rudimentary. Any enlargement is due to repeated attacks of inflammation, and thus renders the tonsil of doubtful utility. The simplest conception gives no function to the tonsil because it inevitably atrophies when normal. The author contends that there are but two theories of possible value: first, that it is an organ of defence applicable to the healthy organ; second, that it is a cause of infection applicable to the pathological organ.

J. HOWELL EVANS.

An unusual case of disturbance of equilibrium occurring as a reflex manifestation of hypertrophied tonsils and adenoids (*'Charlotte Med. Journ.,'* 1911, LXII, p. 153).—**R. B. Hayes** describes this case, that of an Indian boy, aged $3\frac{1}{2}$ years. He was always falling about (in no special direction) and hurting himself, dropping things, and the falls appeared to be always preceded by hiccough. Beyond tonsils and adenoids

nothing abnormal could be found. The removal of the tonsils and adenoids was followed by immediate improvement after ten days.

MACLEOD YEARSLEY.

The tuberculous tonsil (*Journ. of Amer. Med. Assoc.*, 1910, II, p. 1520).—**R. Levy** claims that tuberculosis of the tonsils occurs more frequently than previously recognised, owing to newer methods of investigation. Clinically, tuberculosis of the pharynx with or without tonsillar involvement is among the rarer manifestations of tubercle. Clinical tuberculosis of the tonsils and that determined histologically present marked differences. There is absence of symptoms in the latter and definite subjective and objective manifestations in the former. The diagnosis of true tuberculosis of the tonsils is more satisfactory when based on both clinical and histological findings. The clinical form is a very grave condition and is probably not curable. Extirpation of the tonsil is rarely indicated in tonsillar tuberculosis.

MACLEOD YEARSLEY.

Vincent's angina (*Mitteil. aus den Hamburg. Staatskrankenanstalten*, 1910, XI, p. 69).—**F. Reiche** has seen fifty-three cases, and here records short histories of twenty-seven. Only three were under fifteen years, the rest were in adults. Thirty-three per cent. occurred between July and September; four had relapses. In all the cases the characteristic organisms predominated, and diphtheria bacilli were absent. Many had constitutional disturbance manifested by leucocytosis, enlargement of the spleen, and in a few cases by nephritis, palatal and ciliary paralysis, and peripheral palsies. A unique fatal case in a boy, aged 9 years, in whom death in the fourth week was due to myocarditis, is recorded. Repeated bacteriological examination showed an absence of diphtheria bacilli. Histological examination of the kidneys, liver, and heart-muscle showed extensive fatty infiltration of the parenchyma. Interstitial changes were absent.

J. D. ROLLESTON.

Vincent's angina (*Journ. Amer. Med. Assoc.*, 1910, II, p. 1510).—**F. Fraley** records an epidemic of nine cases among patients aged from three to fifteen years which occurred in an institution which was constantly receiving children from the worst possible hygienic surroundings. None of the children had any fever or other symptoms of illness. The infection was probably conveyed by a tumbler kept by a water cooler from which the children drank when thirsty. In some of the cases the characteristic organisms were found where the gums were spongy or bled easily without the production of either exudation or ulceration.

J. D. ROLLESTON.

Collar-stud in œsophagus (*New York Med. Journ.*, 1910, II, p. 1210).—**H. Arrowsmith**.—A girl, aged 3 years, convalescing from infantile paralysis, swallowed a large collar-stud which her nurse had given her to play with. She was immediately seized with dyspnoea, dysphagia, and regurgitation of fluids through the nose. The urgent symptoms subsided in a few days, and the parents assumed that the stud had passed into the stomach, but the child still had severe cough, with frequent choking spells, and became weak and emaciated. These symptoms were regarded as the result of her recent severe illness, and she was treated with tonics and sent into the country. Ten months after swallowing the stud it was located by the X-rays at the level of the first rib. Death took place during the operation before anæsthesia was complete. Post mortem, it was found that the

lower and larger disc had lacerated the trachea, and that the part still in the œsophagus was surrounded by a tough, encysting wall. The case is reported to show that extraction of the stud would have been easy any time within a few days or weeks of its ingestion.

J. D. ROLLESTON.

Congenital inspiratory laryngeal stridor ('*Gazz. Med. Ital.*, February, 1911, No. 6, p. 53).—**Shukowski** says that this form of stridor was, until a few years back, confused with other forms associated with compression of the larynx. It begins as a rule immediately after birth, rarely after a few days, and has a special musical tone; expiration is silent. The general health is unaffected and there is no cyanosis; the thorax becomes ultimately deformed and bird-shaped. The stridor gradually diminishes and disappears after one or two years. Heubner, however, thinks it sometimes accountable for sudden death in infants. The voice is normal and there is no cough. During sleep the stridor diminishes and may disappear. Physical examination reveals nothing abnormal. Ordinary laryngo-spasm is differentiated by its beginning suddenly in a child of about three months, especially if suffering from rickets or convulsions. As to cause, Thomson believes there is a disturbance of the co-ordinating centre of respiration which Semon and Horsley localise in the neighbourhood of the thalamus. Robertson supposes a paralysis of the laryngeal muscles, Trunupp, a functional disturbance of the same. Other observers attribute a mechanical causation. The author noticed that in two cases under his care there was microglossia with microcheilia and deficient development of jaw, so that the tongue occupied almost the whole of the back part of the mouth and caused the stridor by thus pressing on the epiglottis. In other cases there existed various mechanical causes—cysts, abscesses, tumours, and in one case a syphilitic lesion of the epiglottis.

VINCENT DICKINSON.

Asphyxia caused by ascaris lumbricoides ('*Nord. med. Ark.*, 1910, *Afd.* 11, Nr. 8, p. 26).—**C. Hansted**.—A girl, aged $3\frac{1}{2}$ years, suddenly had a dyspnœal attack, for which her mother gave her some warm milk. The child at once vomited, and a living ascaris was found in the vomit. Temporary relief ensued, but a few hours later another dyspnœal attack occurred, and was not relieved by tracheotomy. At the necropsy a dead ascaris, 15 cm. long, was found at the bifurcation of the trachea.

J. D. ROLLESTON.

Reviews.

LA STÉNOSE DU PYLORE, PAR HYPERTROPHIE MUSCULAIRE CHEZ LES NOURRISSONS. By PIERRE FREDET and LOUIS GUILLEBOT. Figs. 15, pp. 83. Imprimerie et Librairie Edouard Privat. Toulouse: 1910.

In this report to the Sixth Congress of Gynæcology, Obstetrics and Diseases of Children, held at Toulouse in September, 1910, Guillemot and

Fredet sum up the position of this subject from the medical and surgical aspects. The authors have paid great attention to the bibliography, which occupies eighteen pages, or rather more than one fifth of the reprint, and have given full credit to British and American writers. The collection of 598 cases made by Ibrahim in 1908 is also utilised, and among other points shows that the vast majority of the cases occur in England, the United States of America, and Germany, and that it is rare in the Latin and Slavonic races. The authors adopt the explanation of a congenital malformation and reject the hypothesis of spasm. This monograph, the price of which is not given, is a most valuable source of reference.

H. D. R.

THE OCCURRENCE OF INFANTILE PARALYSIS IN MASSACHUSETTS IN 1908;
INFANTILE PARALYSIS IN MASSACHUSETTS IN 1909.

THESE are the reports of various authors to the Massachusetts State Board of Health, which have already appeared in the 'Boston Medical and Surgical Journal,' 1909 and 1910. They are founded upon the observations of the physicians in that State, who notified the particulars of their cases on forms provided by the Board. By this excellent method of co-operation much valuable information was obtained, most of which is already well known.

The first report, dealing with the epidemic of 1908, is the work of Drs. R. W. Lovett and H. C. Emerson, and after the careful study of much interesting matter reaches the conclusions that the disease is bacterial in origin, and at the most mildly contagious. The data upon which the latter opinion is formed are most carefully verified, although drawn from a comparatively small outbreak. The report also suggests that the harmful agent enters the digestive tract in most instances, but finds no evidence to show whether the infection is carried to the patient directly or by means of food.

The report on the epidemic of 1909 is much longer, and is written by several authors. It deals in great detail with various localised outbreaks of acute poliomyelitis, and has sections on the treatment and early diagnosis of the disease. A careful summary is also given of the recent experimental work, the results of which are already widely known.

The distribution of the disease in infected areas is examined most thoroughly, but no very definite conclusions can be drawn from the facts ascertained. The relationship of the affected areas to those in which the disease had been prevalent in the previous year, the size of the towns, the sanitary conditions, the temperature and rain-fall records and other points are carefully considered. In many instances it was noted that the disease appeared to follow the distribution of the rivers, and it was thought that bathing might be a possible source of infection, a point raised by Macalister in a very suggestive paper in this JOURNAL in 1905. Unfortunately no evidence is given by which it can be proved that these occurrences were more than could be accounted for by the consideration of the distribution of the population and the seasonal incidence of the infection.

There is much in these reports which must become of great value as our knowledge of the disease increases, and the authors and the authorities responsible for their publication are to be congratulated upon their painstaking investigations.

R. M.

THE MEDICAL ANNUAL: A YEAR-BOOK OF TREATMENT AND PRACTITIONER'S INDEX, 1911. Twenty-ninth year. Bristol: John Wright & Sons, Ltd. Price 8s. 6d. net.

THE present volume maintains the high level of excellence which preceding issues have led us to expect. The various subdivisions of pædiatrics are dealt with by well-known specialists. The articles on acute infectious diseases have been written by Dr. Goodall, whose criticism of the inunction treatment of scarlet fever will be read with interest. Under the heading of anaphylaxis the same writer contests the view expressed by Miller and Root that sudden death after anti-toxin is due to the status lymphaticus and not to the serum. Dr. Goodall declares that "there does not appear to be any strong evidence that the status lymphaticus is concerned in bringing about the result in a large proportion of the cases, if in any at all."

The important subject of infant-feeding is dealt with by Prof. G. F. Still, who also reviews the recent work on chorea, infantile diarrhoea, pertussis, and worms.

In the remarkably full section on diseases of the heart by Dr. Carey Coombs, ample recognition is given to the late Dr. George Carpenter, whose valuable Wightman lecture on "Congenital Malformations of the Heart," delivered before the Royal Society of Medicine, was published in this JOURNAL in 1909.

On p. 363 we have detected a small slip. It is not accurate to say that the "signe de Musset" was described by Alfred de Musset, who observed it in his own case. The term was first employed more than forty years after the death of the author of 'Comedies et Proverbes' by Delpuech, to whom it had been suggested by a passage in the poet's biography written by his brother, Paul de Musset.

Recent work on infantile paralysis is ably summarised by Dr. Purves Stewart and Mr. Keith Monsarrat from the medical and surgical aspects respectively.

In the section on rheumatism Dr. R. Hutchison subscribes to Schichhold's view that the presence of septic foci in the tonsils is largely responsible for the production and maintenance of acute rheumatism, and declares that the removal of tonsils and adenoids in children who have suffered from acute rheumatism affords considerable protection against subsequent returns of the disease.

Numerous excellent illustrations accompany the text, but the close resemblance of the photograph of xanthelasma planum to one of hæmorrhagic smallpox makes it regrettable that a coloured drawing had not been substituted.

While offering our hearty congratulations to all concerned in the production of this admirable work, we would suggest that its value would be still further increased if the practice were more generally adopted by contributors of inserting the volume and page rather than the day of the month in the list of references at the end of each article, as reference to the original paper in the bound volume of the periodical is thereby considerably facilitated.

J. D. R.